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In re Patent Application of

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Applicants: Bednorz et al.

Docket: YO987-074BZ

Serial No.: 08/479,810

Group Art Unit: 1751

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Examiner: M. Kopec

For: NEW SUPERCONDUCTIVE COMPOUNDS HAVING HIGH TRANSITION
TEMPERATURE, METHODS FOR THEIR USE AND PREPARATION

Commissioner for Patents
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APPEAL BRIEF

Part V

CFR 37 §41.37(c)(1)(v)

Summary of Claimed Subject Matter

Summary of Each Claim Under Appeal

VOLUME 2

The term "original claims" refers to the claims filed in the first filed ancestral application, Appl. No. Application Serial Number 07/053,307 filed 05/22/87 (Brief Attachment AU). Summary of the following claims: 1, 12, 24, 27, 34, 36, 40, 42, 46, 55, 57, 58, 59, 64, 69, 77, 84, 86, 71, 93, 96, 103, 109, 123, 130, 135, 137, 139, 140, 361, 373, 374, 379, 383, 386, 438, 496, 497, 535, 543; includes the modifications made in the Thirteenth Supplemental Response submitted 11/25/2006 (unentered at the time of submission of this Brief) to use the terms "current source" and "temperature controller" used in allowed claims. Summary of the following claims: 218, 222, 229, 309, 313, 320, 466, 476, 517, 522, 467, 477, 5128 and 523 include the correction of the typographical errors made in the Thirteenth Supplemental Response submitted 11/25/2006 (unentered at the time of submission of this Brief).

CLAIM 1

Independent CLAIM 1 is directed to a superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or rare earth-like element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a temperature controller for maintaining the composition at the temperature to exhibit the superconductivity and a current source for passing an electrical superconducting current through the composition while exhibiting the superconductivity.

Support for claim 1 is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20 line 1 to page 21, line 2 and page 18, line 20. Support is in the

specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

CLAIMS 2

Dependent CLAIM 2 is directed to the superconducting apparatus of claim 1, further including an alkaline earth element substituted for at least one atom of the rare earth or rare earth-like element in the composition.

Support is found in original claim 2 at page 29 of the specification.

CLAIM 3

Dependent CLAIM 3 is directed to the superconducting apparatus of claim 2, where the transition metal is Cu at page 29 of the specification.

Support is found in original claim 3 at page 30 of the specification.

CLAIM 4

Dependent CLAIM 4 is directed to the superconducting apparatus of claim 3, where the alkaline earth element is selected from the group consisting of B, Ca, Ba, and Sr.

Support is found in original claim 4 at page 30 of the specification.

CLAIM 5

Dependent CLAIM 5 is directed to the superconducting apparatus of claim 1, where the transition metal element is selected from the group consisting of Cu, Ni, and Cr.

Support is found in original claim 5 at page 30 of the specification.

CLAIM 6

Dependent CLAIM 6 is directed to the superconducting apparatus of claim 2, where the rare earth or rare earth-like element is selected from the group consisting of La, Nd, and Ce.

Support is found in original claim 6 at page 30 of the specification.

CLAIM 7

Dependent CLAIM 7 is directed to the superconducting apparatus of claim 1, where the phase is crystalline with a perovskite-like structure.

Support is found in original claim 7 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 8

Dependent CLAIM 8 is directed the superconducting apparatus of claim 2, where the phase is crystalline with a perovskite-like structure.

Support is found in original claim 8 at page 30 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 9

Dependent CLAIM 9 is directed to the superconducting apparatus of claim 1, where the phase exhibits a layer-like crystalline structure.

Support is found in original claim 9 at page 30 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 10

Dependent CLAIM 10 is directed to the superconducting apparatus of claim 1, where the phase is a mixed copper oxide phase.

Support is found in original claim 10 at page 31 of the specification.

CLAIM 11

Dependent CLAIM 11 is directed to the superconducting apparatus of claim 1, where the composition is comprised of mixed oxides with alkaline earth doping.

Support is found in original claim 11 at page 31 of the specification.

CLAIM 12

Independent CLAIM 12 is directed to a superconducting combination, comprising a superconductive oxide having a transition temperature greater than or equal to 26°K,

a current source for passing a superconducting electrical current through the composition while the composition is at a temperature greater than or equal to 26°K and less than the transition temperature, and

a temperature controller for cooling the composition to a superconducting state at a temperature greater than or equal to 26°K.

Support for claim 12 is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), , 84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20 line 1 to page 21, line 2, and page 18, line 20. Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

CLAIM 13

Dependent CLAIM 13 is directed to the combination of claim 12, where the superconductive composition includes a transition metal oxide.

Support is found in original claim 13 at page 31 of the specification

CLAIM 14

Dependent CLAIM 14 is directed to the combination of claim 12, where the superconductive composition includes Cu-oxide.

Support is found in original claim 14 at page 32 of the specification.

CLAIM 15

Dependent CLAIM 15 is directed to the combination of claim 12, where the superconductive composition includes a multivalent transition metal, oxygen, and at least one additional element.

Support is found in original claim 15 at page 32 of the specification.

CLAIM 16

Dependent CLAIM 16 is directed to the combination of claim 15, where the transition metal is Cu.

Support is found in original claim 16 at page 32 of the specification.

CLAIM 17

Dependent CLAIM 17 is directed to the combination of claim 15, where the additional element is a rare earth or rare earth-like element.

Support is found in original claim 17 at page 32 of the specification.

CLAIM 18

Dependent CLAIM 18 is directed to the combination of claim 15, where the additional element is an alkaline earth element.

Support is found in original claim 18 at page 32 of the specification.

CLAIM 19

Dependent CLAIM 19 is directed to the combination of claim 12, where the composition includes a perovskite-like superconducting phase.

Support is found in original claim 19 at page 32 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 20

Dependent CLAIM 20 is directed to the combination of claim 12, where the composition includes a substituted transition metal oxide at page 33 of the specification.

Support is found in original claim 20 at page 33 of the specification.

CLAIM 21

Dependent CLAIM 21 is directed to the combination of claim 20, where the substituted transition metal oxide includes a multivalent transition metal element.

Support can be found in original claim 21 at page 33 of the specification.

CLAIM 22

Dependent CLAIM 22 is directed to the combination of claim 20, where the substituted transition metal oxide is an oxide of copper.

Support is found in original claim 22 at page 33 of the specification.

CLAIM 23

Dependent CLAIM 23 is directed to the combination of claim 20, where the substituted transition metal oxide has a layer-like structure.

Support is found in original claim 23 at page 33 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 24

Independent CLAIM 24 is directed to an apparatus comprising:

a transition metal oxide having a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to of 26°K,

a temperature controller for lowering the temperature of the material at least to the critical temperature to produce the superconducting state in the phase, and

a current source for passing an electrical superconducting current through the transition metal oxide while it is in the superconducting state.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50),), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20. Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

CLAIM 25

Dependent CLAIM 25 is directed to the apparatus of claim 24, where the transition metal oxide is comprised of a transition metal capable of exhibiting multivalent states.

Support is found in original claim 25 at page 34 of the specification.

CLAIM 26

Dependent CLAIM 26 is directed to the apparatus of claim 24, where the transition metal oxide is comprised of a Cu oxide.

Support is found in original claim 26 at page 34 of the specification.

CLAIM 27

Independent CLAIM 27 is directed to a superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition being a substituted Cu-oxide including a superconducting phase having a structure which is structurally substantially similar to the orthorhombic-tetragonal phase of the composition, a temperature controller for maintaining the composition at a temperature greater than or equal to the transition temperature to put the composition in a superconducting state; and a current source for passing current through the composition while in the superconducting state.

Support is found in original claim 27 at page 34 of the specification and in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20. Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

CLAIM 28

Dependent CLAIM 28 is directed to the superconducting apparatus of claim 27, where the substituted Cu-oxide includes a rare earth or rare earth-like element.

Support is found in original claim 28 at pages 29 to 30 of the specification.

CLAIM 29

Dependent CLAIM 29 is directed to the superconducting apparatus of claim 27, where the substituted Cu-oxide includes an alkaline earth element.

Support is found in original claim 29 at page 35 of the specification.

CLAIM 30

Dependent CLAIM 30 is directed to the superconducting apparatus of claim 29, where the alkaline earth element is atomically large with respect to Cu.

Support is found in original claim 30 at page 35 of the specification.

CLAIM 31

Dependent CLAIM 31 is directed to the superconducting apparatus of claim 27, where the composition has a crystalline structure which enhances electron-phonon interactions to produce superconductivity at a temperature greater than or equal to 26°K.

Support is found in original claim 31 at page 35 of the specification and at page 18, line 20 of the specification.

CLAIM 32

Dependent CLAIM 32 is directed to the superconducting apparatus of claim 31, where the crystalline structure is layer-like, enhancing the number of Jahn-Teller polarons in the composition.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 33

Independent CLAIM 33 is directed to a superconducting apparatus comprising a composition having a superconducting onset temperature greater than or equal to 26°K, the composition being comprised of a copper oxide doped with an alkaline earth element where the concentration of the alkaline earth element is near to the concentration of the alkaline earth element where the superconducting copper oxide phase in the composition undergoes an orthorhombic to tetragonal structural phase transition.

Support is found in original claim 33 at pages 35-36 of the specification and in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), , 84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and

the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20.

CLAIM 34

Independent CLAIM 34 is directed to a superconducting apparatus having a superconducting onset temperature greater than or equal to 26°K, the composition being comprised of a mixed copper oxide doped with an element chosen to result in Cu^{3+} ions in the composition and a current source for passing a superconducting current through the superconducting composition.

Support is found in original claim 34 at page 36 of the specification and in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-5084), 84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20.

CLAIM 35

Dependent CLAIM 35 is directed to the superconducting apparatus of claim 34, where the doping element includes an alkaline earth element.

Support is found in original claim 35 at age 356 of the specification.

CLAIM 36

Independent CLAIM 36 is directed to a combination comprising:

a composition having a superconducting onset temperature greater than or equal to 26°K, the composition being comprised of a substituted copper oxide

exhibiting mixed valence states and at least one other element in its crystalline structure,

a current source for passing a superconducting electrical current through the composition while the composition is at a temperature greater than or equal to 26°K and less than the superconducting onset temperature, and

a temperature controller for cooling the composition to a superconducting state at a temperature greater than or equal to 26°K.

Support is found in original claim 36 at pages 36 to 37 of the specification and in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20. Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

CLAIM 37

Dependent CLAIM 37 is directed to the combination of claim 36, where the at least one other element is an alkaline earth element.

Support is in original claim 37 at page 37 of the specification.

CLAIM 38

Dependent CLAIM 38 recites the combination of claim 36, where the at least one other element is an element which results in Cu^{3+} ions in the composition.

Support is in original claim 38 at page 37 of the specification.

CLAIM 39

Dependent CLAIM 39 is directed to the combination of claim 36, where the at least one other element is an element chosen to result in the presence of both Cu^{2+} and Cu^{3+} ions in the composition.

Support is found original claim 39 at page 37 of the specification.

CLAIM 40

Independent CLAIM 40 is directed to an apparatus comprising a superconductor exhibiting a superconducting onset at an onset temperature greater than or equal to 26°K, the superconductor being comprised of at least four elements, none of which is itself superconducting at a temperature greater than or equal to 26°K, a temperature controller for maintaining the superconductor at an operating temperature in excess of the onset temperature to maintain the superconductor in a superconducting state and a current source for passing current through the superconductor while in the superconducting state.

Support is found in original claim 40 at page 38 of the specification and in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20. Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

CLAIM 41

Dependent CLAIM 41 is directed to the apparatus of claim 40, where the elements include a transition metal and oxygen.

Support is found in original claim 41 at page 38 of the specification..

CLAIM 42

Independent CLAIM 42 A apparatus having a superconducting onset temperature greater than or equal to 26°K, the superconductor being a doped transition metal oxide, where the transition metal is itself non-superconducting and a current source for passing a superconducting electric current through the composition.

Support is found in original claim 42 at page 38 of the specification and in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20.

CLAIM 43

Dependent CLAIM 43 is directed to the apparatus of claim 42, where the doped transition metal oxide is multivalent in the superconductor.

Support is found in original claim 42 at page 38 of the specification.

CLAIM 44

Dependent CLAIM 44 is directed to the apparatus of claim 42, further including an element which creates a mixed valent state of the transition metal.

Support is in original claim 44 at page 38 of the specification.

CLAIM 45

Dependent CLAIM 45 is directed to the apparatus of claim 43, where the transition metal is Cu.

Support is found in original claim 45 at page 39 of the specification.

CLAIM 46

Independent CLAIM 46 is directed to an apparatus having a superconductor having a superconducting onset temperature greater than or equal to 26°K, the superconductor being an oxide having multivalent oxidation states and including a metal, the oxide having a crystalline structure which is oxygen deficient and a current source for passing a superconducting electric current through the superconductor.

Support is found in original claim 46 at pages 39 of the specification and in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20 and in original claim 42 at page 38 of the specification.

CLAIM 47

Dependent CLAIM 47 is directed to the apparatus of claim 46, where the transition metal is Cu.

Support is found in original claim 47 at page 39 of the specification.

CLAIM 48

Independent CLAIM 48 is directed to a superconductive apparatus comprising a superconductive composition comprised of a transition metal oxide having substitutions therein, the amount of the substitutions being sufficient to produce sufficient electron-phonon interactions in the composition that the composition exhibits a superconducting onset at temperatures greater than or equal to 26°K, and a source of current for passing a superconducting electric current through the superconductor.

Support is found in original claim 48 at page 39 of the specification and in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20 and in original claim 42 at page 38 of the specification.

CLAIM 49

Dependent CLAIM 49 is directed to the superconductive apparatus of claim 48, where the transition metal oxide is multivalent in the composition.

Support is in original claim 49 at page 40 of the specification.

CLAIM 50

Dependent CLAIM 50 is directed to the superconductive apparatus of claim 48, where the transition metal is Cu.

Support is found in original claim 50 at page 40 of the specification.

CLAIM 51

Dependent CLAIM 51 is directed to the superconductive apparatus of claim 48, where the substitutions include an alkaline earth element.

Support is found in original claim 51 at page 40 of the specification.

CLAIM 52

Dependent CLAIM 52 is directed to the superconductive apparatus of claim 48, where the substitutions include a rare earth or rare earth-like element.

Support is found in original claim 52 at page 40 of the specification.

CLAIM 53

Independent CLAIM 53 A superconductive apparatus comprised of a copper oxide having a layer-like crystalline structure and at least one additional element substituted in the crystalline structure, the structure being oxygen deficient and exhibiting a superconducting onset temperature greater than or equal to 26°K.

Support is found in original claim 53 at page 40 of the specification and in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50),

84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20 and in original claim 42 at page 38 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 54

Dependent CLAIM 54 is directed to the superconductor of claim 53, where the additional element creates a mixed valent state of the copper oxide in the superconductor.

Support is in original claim 54 at page 41 of the specification.

CLAIM 55

Independent CLAIM 55 is directed to a combination, comprising:

a transition metal oxide having an superconducting onset temperature greater than about 26°K and having an oxygen deficiency, the transition metal being non-superconducting at the superconducting onset temperature and the oxide having multivalent states,

a current source for passing an electrical superconducting current through the oxide while the oxide is at a temperature greater than or equal to 26°K, and

a temperature controller for cooling the oxide in a superconducting state at a temperature greater than or equal to 26°K.

Support is found in original claim 55 at page 41 of the specification and in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

CLAIM 56

Dependent CLAIM 56 is directed to the combination of claim 55, where the transition metal is Cu.

Support I in original claim 56 at page 41 of the specification.

CLAIM 57

Independent CLAIM 57 is directed to a combination including;

a superconducting oxide having a superconducting onset temperature greater than or equal to 26°K and containing at least 3 elements which are non-superconducting at the onset temperature,

a current source for passing a superconducting current through the oxide while the oxide is maintained at a temperature greater than or equal to 26°K, and

a temperature controller for maintaining the oxide in a superconducting state at a temperature greater than or equal to 26°K and less than the superconductive onset temperature.

Support is found in original claim 57 at page 42 of the specification and in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

CLAIM 58

Independent CLAIM 58 is directed to a combination, comprised of:

a copper oxide superconductor having a superconductor onset temperature greater than about 26°K including an element which results in a mixed valent state in the oxide, the oxide being crystalline and having a layer-like structure,

a current source for passing a superconducting current through the copper oxide while it is maintained at a temperature greater than or equal to 26°K and less than the superconducting onset temperature, and

a temperature controller for cooling the copper oxide to a superconductive state at a temperature greater than or equal to 26°K and less than the superconducting onset temperature.

Support is found in original claim 58 at pages 42 and 43 of the specification and in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 59

Independent CLAIM 59 is directed to a combination, comprised of:

a ceramic-like material having an onset of superconductivity at an onset temperature greater than or equal to 26°K,

a current source for passing a superconducting electrical current through the ceramic-like material while the material is maintained at a temperature greater than or equal to 26°K and less than the onset temperature, and

a temperature controller for cooling the superconducting ceramic-like material to a superconductive state at a temperature greater than or equal to 26°K and less than the onset temperature, the material being superconductive at temperatures below the onset temperature and a ceramic at temperatures above the onset temperature.

Support is found in original claim 59 at page 43 of the specification and in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

CLAIM 60

Independent CLAIM 60 is directed to an apparatus comprised of a transition metal oxide, and at least one additional element, the superconductor having a distorted crystalline structure characterized by an oxygen deficiency and exhibiting a superconducting onset temperature greater than or equal to of 26°K, a source of current for passing a superconducting electric current in the transition metal oxide, and a cooling apparatus for maintaining the transition metal oxide below the onset temperature at a temperature greater than or equal to 26°K.

Support is found in original claim 60 at pages 43 and 44 of the specification and in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20 and in original claim 42 at page 38 of the specification.

CLAIM 61

Dependent CLAIM 61 is directed to the apparatus of claim 60, where the transition metal is Cu.

Support is in original claim 61 at page 44 of the specification.

CLAIM 62

Independent CLAIM 62 is directed to an apparatus comprised of a transition metal oxide and at least one additional element, the superconductor having a distorted crystalline structure characterized by an oxygen excess and exhibiting a superconducting onset temperature greater than or equal to 26°K, a source of current for passing a superconducting electric current in the transition metal oxide, and a cooling apparatus for maintaining the transition metal oxide below the onset temperature and at a temperature greater than or equal to of 26°K.

Support is found in original claim 62 at page 44 of the specification and in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description

at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20 and in original claim 42 at page 38 of the specification.

CLAIM 63

Dependent CLAIM 63 is directed to the apparatus of claim 62, where the transition metal is Cu.

Support is in original claim 63 at page 44 of the specification.

CLAIM 64

Independent CLAIM 64 is directed to a combination, comprising:

a mixed copper oxide composition having enhanced polaron formation, said composition including an element causing the copper to have a mixed valent state in the composition, said composition further having a distorted octahedral oxygen environment leading to a T_c greater than or equal to 26°K,

a current source for providing a superconducting current through the composition at temperatures greater than or equal to 26°K and less than the T_c , and

a temperature controller for cooling the composition to a temperature greater than or equal to 26°K and less than the T_c .

Support is found in original claim 64 at pages 44 to 45 of the specification and in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and

page 18, line 20 and in original claim 42 at page 38 of the specification. Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

Support is at original claim 36 at page 36 of the specification. Support is found at page 26, lines 1-15 of the specification. Support is found in original claim 44 on page 38 of the specification and original claim 39 at page 37 of the specification.

CLAIM 65

CLAIM 65 is allowed.

CLAIM 66

Independent CLAIM 66 is directed to an apparatus comprising a superconductive composition having a transition temperature greater than or equal to 26°K, the composition including a multivalent transition metal oxide and at least one additional element, the composition having a distorted orthorhombic crystalline structure, a source of current for passing a superconducting electric current in the transition metal oxide, and a cooling apparatus for maintaining the transition metal oxide below the onset temperature and at a temperature greater than or equal to 26°K.

Support is found in original claim 66 at pages 45 to 46 of the specification and in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20 and in original claim 42 at page 38 of the specification.

CLAIM 67

Dependent CLAIM 67 is directed to the apparatus of claim 66, where the transition metal oxide is a mixed copper oxide.

Support is found in original claim 67 at page 46 of the specification.

CLAIM 68

Dependent CLAIM 68 is directed to the apparatus of claim 67, where the one additional element is an alkaline earth element.

Support is found in original claim 68 at page 46 of the specification.

CLAIM 69

Independent CLAIM 69 is directed to a superconductive combination, comprising:

a superconducting composition exhibiting a superconducting transition temperature greater than or equal to 26°K, the composition being a transition metal oxide having a distorted orthorhombic crystalline structure, and

a current source for passing a superconducting electrical current through the composition while the composition is at a temperature greater than or equal to 26°K and less than the superconducting transition temperature.

Support is found in original claim 69 at page 46 of the specification and in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification), the

title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20 and in original claim 42 at page 38 of the specification.

CLAIM 70

Dependent CLAIM 70 is directed to the combination of claim 69, where the transition metal oxide is a mixed copper oxide.

Support is found in original claim 70 at page 47 of the specification.

CLAIM 71

Dependent CLAIM 71 is directed to the combination of claim 70, where the mixed copper oxide includes an alkaline earth element.

Support is found in original claim 71 at page 47 of the specification.

CLAIM 72

Dependent CLAIM 72 is directed to the combination of claim 71, where the mixed copper oxide further includes a rare earth or rare earth-like element.

Support is found in original claim 72 at page 47 of the specification.

CLAIM 73 to 76 are withdrawn.

CLAIM 77 -81 are allowed.

CLAIMS 82 and 83 are withdrawn.

CLAIM 84

Independent CLAIM 84 is directed to a superconducting combination, comprising:

a mixed transition metal oxide composition containing a non-stoichiometric amount of oxygen therein, a transition metal and at least one additional element, the composition having substantially zero resistance to the flow of electricity therethrough when cooled to a superconducting state at a temperature greater than or equal to 26°K, the mixed transition metal oxide has a superconducting onset temperature greater than or equal to 26°K, and

a current source for passing an electrical superconducting current through the composition when the composition is in the superconducting state at a temperature greater than or equal to 26°K, and less than the superconducting onset temperature.

Support is found in original claim 84 at page 52 of the specification and in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20 and in original claim 42 at page 38 of the specification.

CLAIM 85

Dependent CLAIM 85 is directed to the combination of claim 84, where the transition metal is copper.

Support is in original claim 84 at page 82 of the specification.

CLAIMS 86 and 87 are allowed.

CLAIM 88

Independent CLAIM 88 is directed to an apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K,

a cooler for cooling the composition to a temperature greater than or equal to 26°K at which temperature the composition exhibits the superconductive state, and

a current source for passing an electrical current through the composition while the composition is in the superconductive state.

Support is found in original claim 88 at pages 53 to 54) of the specification and in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20 and in original claim 42 at page 38 of the specification.

CLAIM 89

Dependent CLAIM 89 is directed to the apparatus of claim 88, where the composition is comprised of a metal oxide.

Support is found in original claim 89 at page 54 of the specification.

CLAIM 90

Dependent CLAIM 90 is directed to the apparatus of claim 88, where the composition is comprised of a transition metal oxide.

Support I in original claim 90 at page 54 of the specification.

CLAIM 91

Independent CLAIM 91 is directed to a combination, comprising:

a composition exhibiting the onset of a DC substantially zero resistance state at an onset temperature in excess of 30°K, and

a current source for passing an electrical current through the composition while it is in the substantially zero resistance state.

Support is found at page 10, lines 1-3, page 20, lines 1-5 of the specification.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20 and in original claim 42 at page 38 of the specification.

CLAIM 92

Dependent CLAIM 92 is directed to the combination of claim 91, where the composition is a copper oxide.

Support is found in original claim 10 at page 31 of the specification.

CLAIM 93

Independent CLAIM 93 is directed to an apparatus, comprising:

a mixed copper oxide material exhibiting an onset of superconductivity at an onset temperature greater than or equal to 26°K, and

a current source for producing an electrical current through the copper oxide material while it is in a superconducting state at a temperature greater than or equal to 26°K.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

CLAIM 94

Dependent CLAIM 94 is directed to the apparatus of claim 93, where the copper oxide material exhibits a layer-like crystalline structure.

Support is found in original claim 53 at page 40 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three

individual crystallographic phases.” In the conclusion at page 192 the article states “[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure.”

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

CLAIM 95

Dependent CLAIM 95 is directed to the apparatus of claim 93, where the copper oxide material exhibits a mixed valence state.

Support is found in original claim 36 at page 36 of the specification.

CLAIM 96

Independent CLAIM 96 is directed to a superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition comprising a copper-oxide compound having a layer-type perovskite-like crystal structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a current source for causing an electric current to flow in the superconductor element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification. Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

Support is found in original claim 32 at page 35 of the specification.
Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIMS 97 to 99 are allowed.

CLAIM 100

CLAIM 100 The superconductive apparatus according to claim 96 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

Support is at original claim 36 at page 36 of the specification. Support is found at page 26, lines 1-15 of the specification. Support is found in original claim 44 on page 38 of the specification and original claim 39 at page 37 of the specification.

CLAIM 101

Dependent CLAIM 101 is directed to the superconductive apparatus according to claim 100 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

Support is found in original claim 81 at page 51 of the specification.

CLAIM 102

Dependant CLAIM 102 is directed to the superconductive apparatus according to claim 101 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

Support is found in original claims 81 and 82 at page 51 and claim 84 and 86 at pages 52 to 53 of the specification.

CLAIMS 103 to 108 are allowed.

CLAIM 109

Independent CLAIM 109 is directed to a superconductive apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or alkaline earth element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a temperature controller for maintaining the composition at the temperature to exhibit the superconductivity and current source for passing an electrical

superconducting current through the composition while exhibiting the superconductivity.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification. Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

CLAIM 110

Dependent CLAIM 110 is directed to the combination of claim 15, where the additional element is rare earth or alkaline earth element.

Support is found at page 12 lines 6-8 of the specification and in the paragraph bridging pages 6 and 7.

CLAIM 111

Independent CLAIM 111 is directed to a device comprising a superconducting transition metal oxide having a superconductive onset temperature greater than or equal to 26°K, the superconducting transition metal oxide being at a temperature less than the superconducting onset temperature and having a superconducting current flowing therein.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69

(page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification.

CLAIM 112

Independent CLAIM 112 is directed to a device comprising a superconducting copper oxide having a superconductive onset temperature greater than or equal to 26°K, the superconducting copper oxide being at a temperature less than the superconducting onset temperature and having a superconducting current flowing therein.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification.

CLAIMS 113 and 114 are allowed.

CLAIM 115

Independent CLAIM 115 is directed to a device comprising a transition metal oxide having a T_c greater than or equal to 26°K carrying a superconducting current the transition metal oxide is maintained at a temperature less than the T_c .

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification.

CLAIM 116

Independent CLAIM 116 is directed to an apparatus comprising a transition metal oxide having a T_c greater than or equal to 26°K carrying a superconducting current the transition metal oxide is maintained at a temperature less than the T_c .

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification.

CLAIM 117

Independent CLAIM 117 is directed to a structure comprising a transition metal oxide having a T_c greater than or equal to 26°K carrying a superconducting current.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification.

CLAIM 118

Independent CLAIM 118 is directed to an apparatus comprising a transition metal oxide having a T_c greater than or equal to 26°K carrying a superconducting current.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to

21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification.

CLAIM 119

Independent CLAIM 119 is directed to a device comprising a copper oxide having a T_c greater than or equal to 26°K carrying a superconducting current the copper oxide is maintained at a temperature less than the T_c .

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification.

CLAIM 120

Independent CLAIM 120 is directed to an apparatus comprising a copper oxide having a T_c greater than or equal to 26°K carrying a superconducting current the copper oxide is maintained at a temperature less than the T_c .

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69

(page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification.

CLAIM 121

Independent CLAIM 121 is directed to a device comprising a copper oxide having a T_c greater than or equal to 26°K carrying a superconducting current.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification.

CLAIM 122

Independent CLAIM 122 is directed to an apparatus comprising a copper oxide having a T_c greater than or equal to 26°K carrying a superconducting current.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification.

CLAIMS 123 to 125 are allowed

CLAIM 126

Independent CLAIM 126 is directed to a device comprising a composition of matter having a T_c greater than or equal to 26°K carrying a superconducting current, the composition comprising at least one each of a rare earth, and copper oxide.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification.

CLAIM 127

Independent CLAIM 127 is directed to a device comprising a composition of matter having a T_c greater than or equal to 26°K carrying a superconducting current, the composition comprising at least one each of a IIIB element, and copper oxide.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification.

CLAIM 128

Independent CLAIM 128 is directed to a transition metal oxide device comprising a T_c greater than or equal to 26°K and carrying a superconducting current.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification.

CLAIM 129

Independent CLAIM 129 I directed to a copper oxide device comprising a T_c greater than or equal to 26°K and carrying a superconducting current.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification.

CLAIM 130

Independent CLAIM 130 is directed to a superconductive apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or Group III B element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a temperature controller for maintaining the composition at the temperature to exhibit the superconductivity and a current source for passing an electrical superconducting current through the composition which exhibiting the superconductivity.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification. Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification.

CLAIM 131

Dependent CLAIM 131 is directed to combination of claim 15, where the additional element is a rare earth or Group III B element.

Support is found in original claim 17 at page 32 of the specification.

CLAIM 132

Dependent CLAIM 132 is directed to the combination of claim 12, where the composition includes a substantially perovskite superconducting phase.

Support is found in original claim 19 at page 32 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article

states “[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure.”

CLAIM 133

Dependent CLAIM 133 is directed to the superconducting apparatus of claim 27, where the substituted Cu-oxide includes a rare earth or Group III B element.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification.

CLAIM 134

Dependent CLAIM 134 is directed to the combination of claim 71, where the mixed copper oxide further includes a rare earth or Group III B element.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification.

CLAIM 135 to 138 are allowed.

CLAIM 139

Independent CLAIM 139 is directed to a superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the composition

having a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a current source for causing an electric current to flow in the superconductor element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification. Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 140 is allowed.

CLAIM 141

Independent CLAIM 141 is directed to an apparatus comprising a transition metal oxide having a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to 26°K,

a temperature controller maintaining the temperature of the material at a temperature less than the critical temperature to produce the superconducting state in the phase, and

a current source passing an electrical supercurrent through the transition metal oxide while it is in the superconducting state.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification.

CLAIM 142

Dependent CLAIM 142 is directed to the apparatus of claim 141, where the transition metal oxide is comprised of a transition metal capable of exhibiting multivalent states.

Support can be found at page 5, lines 1-10 of the specification.

CLAIM 143

Dependent CLAIM 143 is directed to the apparatus of claim 141, where the transition metal oxide is comprised of a Cu oxide.

Support can be found at page 6, lines 1-10 of the specification.

CLAIMS 144 to 145 are allowed.

CLAIM 146

Independent CLAIM 146 is directed to an apparatus:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K,

a temperature controller maintaining the composition at a temperature greater than or equal to 26°K at which temperature the composition exhibits the superconductive state, and

a current source passing an electrical current through the composition while the composition is in the superconductive state.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20

and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification.

CLAIM 147

Dependent CLAIM 147 is directed to the apparatus of claim 146, where the composition is comprised of a metal oxide.

Support is found in original claim 89.

CLAIM 148

Dependent CLAIM 148 is directed to the apparatus of claim 146, where the composition is comprised of a transition metal oxide.

Support is found in original claim 89.

CLAIM 149

Independent CLAIM 149 is directed to a superconductive apparatus for causing electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a layer-type perovskite-like crystal structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) causing an electric current to flow in the superconductor element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIMS 150 to 152 are allowed.

CLAIM 153

Dependent CLAIM 153 is directed to the superconductive apparatus according to claim 149 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

Support is at original claim 36 at page 36 of the specification. Support is found at page 26, lines 1-15 of the specification. Support is found in original claim 44 on page 38 of the specification and original claim 39 at page 37 of the specification.

CLAIM 154

Dependent CLAIM 154 is directed to the superconductive apparatus according to claim 153 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

Support is found in original claim 81 and 82 at page 51 and claims 84 and 86 at pages 52 to 53 of the specification.

CLAIM 155

CLAIM 155 The superconductive apparatus according to claim 154 in which oxygen is present in the copper-oxide compound in a non atomic proportion.

Support is found in original claims 81 and 82 at page 51 and claims 84 and 86 at pages 52 and 53 of the specification.

CLAIM 156 to 161 are allowed.

CLAIM 162

Independent CLAIM 162 is directed to an apparatus comprising copper oxide having a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to 26°K;

a temperature controller maintaining the temperature of the material at a temperature less than the critical temperature to produce the superconducting state in the phase;

a current source passing an electrical supercurrent through the copper oxide while it is in the superconducting state;

the copper oxide includes at least a group consisting of a Group II A element, a rare earth element and a Group III B element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification.

CLAIM 163

Independent CLAIM 163 is directed to an apparatus comprising:

a composition comprising copper, oxygen and any element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, where the composition is a mixed copper oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K;

a temperature controller maintaining the composition in the superconducting state at a temperature greater than or equal to 26°K; and

a current source passing an electrical current through the composition while the composition is in the superconducting state.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

CLAIM 164

Independent CLAIM 164 is directed to an apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K;

a temperature controller maintaining the composition at a temperature greater than or equal to 26°K at which temperature the composition exhibits the superconductive state;

a current source passing an electrical current through the composition while the composition is in the superconductive state; and

the composition including a copper oxide and an element selected from the group consisting of Group II A element, a rare earth element and a Group III B element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

CLAIM 165

Independent CLAIM 165 is directed to an apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound

having a layer-type perovskite-like crystal structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, the superconductive composition includes at least one element selected from the group consisting of a Group II A element, a rare earth element; and a Group III B element;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article

states “[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure.”

CLAIM 166

CLAIM 166 An apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a layer-type perovskite-like crystal structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk- resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to

21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIMS 167 to 181 are is allowed.

CLAIM 182

Independent CLAIM 182 is directed to an apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or alkaline earth element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a temperature controller maintaining the composition at the temperature to exhibit the superconductivity and a current source passing an electrical superconducting current through the composition with the phrase exhibiting the superconductivity. Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the

specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

CLAIM 183

Independent CLAIM 183 is directed to an apparatus comprising a superconducting transition metal oxide having a superconductive onset temperature greater than or equal to 26°K, a temperature controller maintaining the superconducting transition metal oxide at a temperature less than the superconducting onset temperature and a current source flowing a superconducting current therein.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

CLAIM 184

Independent CLAIM 184 is directed to an apparatus comprising a superconducting copper oxide having a superconductive onset temperature greater than or equal to 26°K, a temperature controller maintaining the superconducting copper oxide at a temperature less than the superconducting onset temperature and a current source flowing a superconducting current in the superconducting oxide.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

CLAIM 185 to 186 are allowed.

CLAIM 187

Independent CLAIM 187 is directed to an apparatus comprising a superconducting electrical current in a transition metal oxide having a T_c greater than or equal to 26°K and maintaining the transition metal oxide at a temperature less than the T_c .

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

CLAIM 188

Independent CLAIM 188 is directed to an apparatus comprising a current source flowing a superconducting current in a copper oxide having a T_c greater than or equal to 26°K and a temperature controller maintaining the copper oxide at a temperature less than the T_c .

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

CLAIM 189 to 191 are allowed.

Independent CLAIM 192 is directed to an apparatus comprising a current source flowing a superconducting electrical current in a composition of matter having a T_c greater than or equal to 26°K, the composition comprising at least one each of a rare earth, and copper oxide and a temperature controller maintaining the composition of matter at a temperature less than the T_c .

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

CLAIM 193

Independent CLAIM 193 is directed to an apparatus comprising a current source flowing a superconducting electrical current in a composition of matter having a T_c greater than or equal to 26°K carrying, the composition comprising at least one each of a Group III B element, and copper oxide and a temperature controller maintaining the composition of matter at a temperature less than the T_c .

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the

specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

CLAIM 194

Independent CLAIM 194 is directed to an apparatus comprising a current source flowing a superconducting electrical current in a transition metal oxide comprising a T_c greater than or equal to 26°K and a temperature controller maintaining the transition metal oxide at a temperature less than the T_c .

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

CLAIM 195

Independent CLAIM 195 is directed to an apparatus comprising a current source flowing a superconducting electrical current in a copper oxide composition of matter comprising a T_c greater than or equal to 26°K and a temperature controller maintaining the copper oxide composition of matter at a temperature less than the T_c .

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

CLAIM 196 and 197 are allowed.

CLAIM 198

Independent CLAIM 198 is directed to a superconductive apparatus for causing electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the composition

having a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 199

Dependent CLAIM 199 is directed to the superconductive apparatus according to claim 198 in which the copper-oxide compound of the superconductive composition includes at least one element selected from the group consisting of a rare-earth element, a Group III B element and an alkaline-earth element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

CLAIM 200

Dependent CLAIM 200 is directed to the superconductive apparatus according to claim 199 in which the rare-earth is lanthanum.

Support is found in original claim 6 at page 30 of the specification.

CLAIM 201

Dependent CLAIM 201 is directed to the superconductive apparatus according to claim 199 in which the alkaline-earth element is barium.

Support is found in original claim 6 at page 30 of the specification.

CLAIM 202

Dependent CLAIM 202 is directed to the superconductive apparatus according to claim 198 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

Support is at original claim 36 at page 36 of the specification. Support is found at page 26, lines 1-15 of the specification. Support is found in original claim 44 on page 38 of the specification and original claim 39 at page 37 of the specification.

CLAIM 203

Dependent CLAIM 203 is directed to the superconductive apparatus according to claim 202 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

Support is found at page 11, lines 1-19 of the specification. Support is found in original claims 81 and 82 at page 51 and claim 84 and 86 at pages 52 to 53 of the specification.

CLAIM 204

Dependent CLAIM 204 is directed to the superconductive apparatus according to claim 203 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

Support is found at page 11, lines 1-19 of the specification. Support is found in original claims 81 and 82 at page 51 and claim 84 and 86 at pages 52 to 53 of the specification.

CLAIM 205

Independent CLAIM 205 is directed a superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the copper-oxide compound including at least one element selected from the group consisting of a rare-earth element, a Group III B element and an alkaline-earth element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 206

Dependent CLAIM 206 is directed to the superconductive apparatus according to claim 205 in which the at least one element is lanthanum.

Support is found in original claim 6 at page 30 of the specification.

CLAIM 207

Dependent CLAIM 207 is directed to the superconductive apparatus according to claim 205 in which the alkaline-earth element is barium.

Support is found in original claim 4 at page 30 of the specification.

CLAIM 208

Dependent CLAIM 208 is directed to the superconductive apparatus according to claim 205 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

Support is at original claim 36 at page 36 of the specification. Support is found at page 26, lines 1-15 of the specification. Support is found in original claim 44 on page 38 of the specification and original claim 39 at page 37 of the specification.

CLAIM 209

Dependent CLAIM 209 is directed to the superconductive apparatus according to claim 208 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

Support is found at page 11, lines 1-19 of the specification. Support is found in original claims 81 and 82 at page 51 and claim 84 and 86 at pages 52 to 53 of the specification.

CLAIM 210

Dependent CLAIM 210 is directed to the superconductive apparatus according to claim 209 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

Support is found at page 11, lines 1-19 of the specification. Support is found in original claims 81 and 82 at page 51 and claim 84 and 86 at pages 52 to 53 of the specification.

CLAIM 211

Independent CLAIM 211 is directed to a superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, the superconductive composition includes at least one element selected from the group consisting of a Group II A element, a rare earth element; and a Group III B element;
- (b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 212

Independent CLAIM 212 is directed to a superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 213 to 215 are allowed.

CLAIM 216

Independent CLAIM 216 is directed to a superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal-oxide compound having a substantially layered perovskite crystal structure, the transition metal-oxide compound including a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 217

Dependent CLAIM 217 is directed to an apparatus according to claim 182 wherein the composition comprises a substantially layered perovskite crystal structure.

Support is found at page 26, line 8-25 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 218

Dependent CLAIM 218 is directed to an apparatus according to claim 183 wherein the superconducting transition metal oxide comprises a substantially layered perovskite crystal structure.

Support is found in original claim 32 at page 35 and 13 at page 31 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 219

Dependent CLAIM 219 is directed to an apparatus according to claim 184 wherein the superconducting copper oxide comprises a substantially layered perovskite crystal structure.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article

states “[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure.”

CLAIMS 220 and 221 are allowed.

CLAIM 222

Dependent CLAIM 222 is directed to an apparatus according to claim 187 wherein the transition metal oxide comprises a substantially layered perovskite crystal structure.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants’ article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom “X-ray powder diffractograms ... revealed three individual crystallographic phases.” In the conclusion at page 192 the article states “[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure.”

CLAIM 223

Dependent CLAIM 223 is directed to an apparatus according to claim 188 wherein the copper oxide comprises a substantially layered perovskite crystal structure.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CALIMS 224 TO 226 are allowed.

CLAIM 227

Dependent CLAIM 227 is directed to an apparatus according to claim 192 wherein the composition of matter comprises a substantially layered perovskite crystal structure.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 228

Dependent CLAIM 228 is directed to an apparatus according to claim 193 wherein the composition of matter comprises substantially layered perovskite crystal structure.

Support is found in original claim 32 at page 35 of the specification.
Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 229

Dependent CLAIM 229 is directed to an apparatus according to claim 194 wherein the transition metal oxide comprises substantially layered perovskite crystal structure.

Support is found in original claim 32 at page 35 of the specification.
Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 230

Dependent CLAIM 230 is directed to an apparatus according to claim 195 wherein the copper oxide composition comprises substantially layered perovskite crystal structure.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 231 is allowed.

CLAIM 232

Independent CLAIM 232 is directed to an apparatus comprising:

a transition metal oxide comprising a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to 26°K,

a temperature controller for maintaining the temperature of the material at a temperature less than the critical temperature to produce the superconducting state in the phase, and

a source of an electrical supercurrent through the transition metal oxide while it is in the superconducting state.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to

21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

CLAIM 233

Dependent CLAIM 233 is directed to an apparatus according to claim 232, where the transition metal oxide is comprised of a transition metal capable of exhibiting multivalent states.

Support is found in original claim 1 at page 29 of the specification.

CLAIM 234

Dependent CLAIM 234 is directed to an apparatus according to claim 232, where the transition metal oxide is comprised of a Cu oxide.

Support is found in original claim 22 at page 33 of the specification.

CLAIMS 235 and 236 are allowed.

CLAIM 237

Independent CLAIM 237 is directed to an apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K, a temperature controller for maintaining the composition at a temperature greater than or equal to 26°K at which temperature the composition exhibits the superconductive state, and

a source of an electrical current through the composition while the composition is in the superconductive state.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

CLAIM 238

Dependent CLAIM 238 is directed to an apparatus according to claim 237, where the composition is comprised of a metal oxide.

Support is in original claim 89 on page 54 of the specification.

CLAIM 239

Dependent CLAIM 239 is directed to an apparatus according to claim 238, where the composition is comprised of a transition metal oxide.

Support is in original claim 90 on page 54 of the specification.

CLAIM 240

Independent CLAIM 240 An apparatus capable of carrying electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a layer-type perovskite-like crystal structure, the composition comprising a superconductor transition temperature T_c of greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIMS 241 to 243 are allowed.

CLAIM 244

Dependent CLAIM 244 is directed to An apparatus according to claim 240 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

Support is at original claim 36 at page 36.of the specification. Support is found at page 26, lines 1-15.of the specification. Support is found in original claim 44 on page 38 of the specification and original claim 39 at page 37 of the specification.

CLAIM 245

Dependent CLAIM 245 is directed to An apparatus according to claim 244 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

Support is found at page 11, lines 1-19 of the specification. Support is found in original claims 81 and 82 at page 51 and claim 84 and 86 at pages 52 to 53 of the specification.

CLAIM 247

Dependent CLAIM 246 is directed to an apparatus according to claim 245 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

Support is found at page 11, lines 1-19 of the specification. Support is found in original claims 81 and 82 at page 51 and claim 84 and 86 at pages 52 to 53 of the specification.

CLAIMS 247 to 252 are allowed.

CLAIM 253

Independent CLAIM 253 is directed to an apparatus comprising:

a copper oxide comprising a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to 26°K;

a temperature controller for maintaining the temperature of the material at a temperature less than the critical temperature to produce the superconducting state in the phase;

a source of an electrical supercurrent through the copper oxide while it is in the superconducting state;

the copper oxide includes at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification. Support is found at

page 11, lines 1-19 of the specification. Support is found in original claims 81 and 82 at page 51 and claim 84 and 86 at pages 52 to 53 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

CLAIM 254

Independent CLAIM 254 is directed to an apparatus comprising:

a composition including copper, oxygen and an element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, where the composition is a mixed copper oxide comprising a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K;

a temperature controller for maintaining the composition in the superconducting state at a temperature greater than or equal to 26°K; and

a source of an electrical current through the composition while the composition is in the superconducting state.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

CLAIM 255

Independent CLAIM 255 is directed to an apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K;

a temperature controller for maintaining the composition at a temperature greater than or equal to 26°K at which temperature the composition exhibits the superconductive state;

a source of an electrical current through the composition while the composition is in the superconductive state; and

the composition including a copper oxide and an element selected from the group consisting of Group II A element, a rare earth element and a Group III B element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20

and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

CLAIM 256

Independent CLAIM 256 is directed to an apparatus capable of carrying an electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a layer-type perovskite-like crystal structure, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, the superconductive composition includes at least one element selected from the group consisting of a Group II A element, a rare earth element; and a Group III B element;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the

specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification. Support is found at page 11, lines 1-19 of the specification. Support is found in original claims 81 and 82 at page 51 and claim 84 and 86 at pages 52 to 53 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 257

Independent CLAIM 257 is directed to an apparatus capable of carrying an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound

comprising a layer-type perovskite-like crystal structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification. Support is found at page 11, lines 1-19 of the specification. Support is found in original claims 81 and 82 at page 51 and claim 84 and 86 at pages 52 to 53 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIMS 258 TO 267 are allowed.

CLAIM 268

Independent CLAIM 268 is directed to an apparatus comprising:

a copper oxide comprising a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to 26°K;

a temperature controller for maintaining the temperature of the material at a temperature less than the critical temperature to produce the superconducting state in the phase;

a source for an electrical supercurrent through the copper oxide while it is in the superconducting state;

the copper oxide includes at least one element selected from group consisting of a Group II A element, at least one element selected from the group consisting of a rare earth element and at least one element selected from the group consisting of a Group III B element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification. Support is found at page 11, lines 1-19 of the specification. Support is found in original claims 81 and 82 at page 51 and claim 84 and 86 at pages 52 to 53 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

CLAIMS 269 TO 272 are allowed.

CLAIM 273

Independent CLAIM 273 is directed to an apparatus comprising a composition comprising a transition temperature greater than or equal to 26°K, the composition including a rare earth or alkaline earth element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a temperature controller for maintaining the composition at the temperature to exhibit the superconductivity and a source of an electrical superconducting current through the composition with the phrase exhibiting the superconductivity.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification. Support is found at page 11, lines 1-19 of the specification. Support is found in original claims 81 and 82 at page 51 and claim 84 and 86 at pages 52 to 53 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

CLAIM 274

Independent CLAIM 274 is directed to an apparatus comprising providing a superconducting transition metal oxide comprising a superconductive onset temperature greater than or equal to 26°K, a temperature controller for maintaining the superconducting transition metal oxide at a temperature less than the superconducting onset temperature and a source of a superconducting current therein.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to

21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

CLAIM 275

Independent CLAIM 275 is directed to an apparatus comprising a superconducting copper oxide comprising a superconductive onset temperature greater than or equal to 26°K, a temperature controller for maintaining the superconducting copper oxide at a temperature less than the superconducting onset temperature and a source of a superconducting current in the superconducting oxide.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

CLAIMS 276 to 277 are allowed.

CLAIM 278

Independent CLAIM 278 is directed to an apparatus comprising a source of a superconducting electrical current in a transition metal oxide comprising a T_c greater than or equal to 26°K and a temperature controller for maintaining the transition metal oxide at a temperature less than the T_c .

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

CLAIM 279

Independent CLAIM 279 is directed to an apparatus comprising a source of a superconducting current in a copper oxide comprising a T_c greater than or equal to 26°K and a temperature controller for maintaining the copper oxide at a temperature less than the T_c .

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to

21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

CLAIMS 280 to 282 are allowed.

CLAIM 283

Independent CLAIM 283 is directed to an apparatus comprising a source of a superconducting electrical current in a composition of matter comprising a T_c greater than or equal to 26°K, the composition comprising at least one each of a rare earth, and copper oxide and a temperature controller for maintaining the composition of matter at a temperature less than the T_c .

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification. Support is found at page 11, lines 1-19 of the specification. Support is found in original claims 81 and 82 at page 51 and claim 84 and 86 at pages 52 to 53 of the specification.

CLAIM 284

Independent CLAIM 284 is directed to an apparatus comprising a source of a superconducting electrical current in a composition of matter comprising a T_c greater than or equal to 26°K carrying, the composition comprising at least one each of a III B element, and copper oxide and a temperature controller for maintaining the composition of matter at a temperature less than the T_c .

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification. Support is found at page 11, lines 1-19 of the specification. Support is found in original claims 81 and 82 at page 51 and claim 84 and 86 at pages 52 to 53 of the specification.

CLAIM 285

Independent CLAIM 285 is directed to an apparatus comprising a source of a superconducting electrical current in a transition metal oxide comprising a T_c greater than or equal to 26°K and a temperature controller for maintaining the transition metal oxide at a temperature less than the T_c .

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69

(page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification

CLAIM 286

Independent CLAIM 286 is directed to an apparatus comprising a source of a superconducting electrical current in a copper oxide composition of matter comprising a T_c greater than or equal to 26°K and a temperature controller for maintaining the copper oxide composition of matter at a temperature less than the T_c .

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification.

CLAIMS 287 to 288 are allowed.

CLAIM 289

Independent CLAIM 289 is directed to an apparatus for causing electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a substantially layered perovskite crystal structure, the composition comprising a superconductor transition temperature T_c of greater than or equal to 26°K;
- b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 290

Dependent CLAIM 290 is directed to an apparatus according to claim 289 in which the copper-oxide compound of the superconductive composition includes at least one element selected from the group consisting of a rare-earth element and a Group III B element and at least one alkaline-earth element.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification. Support is found at page 11, lines 1-19 of the specification. Support is found in original claims 81 and 82 at page 51 and claim 84 and 86 at pages 52 to 53 of the specification.

CLAIM 291

Dependent CLAIM 291 is directed to an apparatus according to claim 290 in which the rare-earth or element is lanthanum.

Support is found in original claim 6 at page 30 of the specification.

CLAIM 292

Dependent CLAIM 292 is directed to an apparatus according to claim 290 in which the alkaline-earth element is barium.

Support is found in original claim 4 at page 30 of the specification.

CLAIM 293

Dependent CLAIM 293 is directed to an apparatus according to claim 289 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

Support is at original claim 36 at page 36 of the specification. Support is found at page 26, lines 1-15 of the specification. Support is found in original claim 44 on page 38 of the specification and original claim 39 at page 37 of the specification.

CLAIM 294

Dependent CLAIM 294 is directed to an apparatus according to claim 293 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

Support is found at page 11, lines 1-19 of the specification. Support is found in original claims 81 and 82 at page 51 and claim 84 and 86 at pages 52 to 53 of the specification.

CLAIM 295 An apparatus according to claim 294 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

CLAIM 296 to 301 are allowed.

CLAIM 302

Independent CLAIM 302 is directed to an apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a substantially layered perovskite crystal structure, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, the superconductive composition includes at least one element selected from the group consisting of a Group II A element, a rare earth element; and a Group III B element;
- (b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification. Support is found at page 11, lines 1-19 of the specification. Support is found in original claims 81 and 82 at page 51 and claim 84 and 86 at pages 52 to 53 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col.,

lines 14-16 from the bottom “X-ray powder diffractograms ... revealed three individual crystallographic phases.” In the conclusion at page 192 the article states “[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure.”

CLAIM 303

Independent CLAIM 303 is directed to an apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a substantially layered perovskite crystal structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to

21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIMS 304 to 307 are allowed

CLAIM 308

Dependent CLAIM 308 is directed to an apparatus according to claim 273 wherein the composition comprises a substantially layered perovskite crystal structure.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article

states “[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure.”

CLAIM 309

Dependent CLAIM 309 is directed to an apparatus according to claim 274 wherein the superconducting transition metal oxide comprises a substantially layered perovskite crystal structure.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants’ article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom “X-ray powder diffractograms ... revealed three individual crystallographic phases.” In the conclusion at page 192 the article states “[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure.”

CLAIM 310

Dependent CLAIM 310 is directed to an apparatus according to claim 275 wherein the superconducting copper oxide comprises a substantially layered perovskite crystal structure.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants’ article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom “X-ray powder diffractograms ... revealed three

individual crystallographic phases.” In the conclusion at page 192 the article states “[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure.”

CLAIMS 311 to 312 are allowed.

CLAIMS 313

Dependent CLAIM 313 is directed to an apparatus according to claim 278 wherein the transition metal oxide comprises a substantially layered perovskite crystal structure.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants’ article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom “X-ray powder diffractograms ... revealed three individual crystallographic phases.” In the conclusion at page 192 the article states “[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure.”

CLAIM 314

Dependent CLAIM 314 is directed to an apparatus according to claim 279 wherein the copper oxide comprises a substantially layered perovskite crystal structure.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIMS 315 to 317 are allowed.

CLAIM 318

Dependent CLAIM 318 is directed to an apparatus according to claim 283 wherein the composition of matter comprises a substantially layered perovskite crystal structure.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 319

Dependent CLAIM 319 is directed to an apparatus according to claim 284 wherein the composition of matter comprises substantially layered perovskite crystal structure.

Support is found in original claim 32 at page 35 of the specification.
Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 320

Dependent CLAIM 320 is directed to an apparatus according to claim 285 wherein the transition metal oxide comprises substantially layered perovskite crystal structure.

Support is found in original claim 32 at page 35 of the specification.
Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 321

Dependent CLAIM 321 is directed to an apparatus according to claim 286 wherein the copper oxide composition comprises substantially layered perovskite crystal structure.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 322

Dependent CLAIM 322 is directed to a superconductive combination according to anyone of claims 84 or 85, wherein the mixed transition metal oxide can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 323

Dependent CLAIM 323 is directed to an apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein the composition can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 324

Dependent CLAIM 324 is directed to a combination according to anyone of claims 91, 92 or 36 to 39, wherein the composition can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 325

Dependent CLAIM 325 is directed to a superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-366 or 370, wherein the composition can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 326

Dependent CLAIM 326 is directed to an apparatus according to anyone of claims 93 to 95 or 138, wherein the mixed copper oxide can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 327

Dependent CLAIM 327 is directed to combination according to anyone of claims 64 or 135, wherein the mixed copper oxide can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-23 and page 15, line 20-23.

CLAIM 328

Dependent CLAIM 328 is directed to a superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383 or 384, wherein the superconductive composition can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 329

Dependent CLAIM 329 is directed to a superconductive combination according to anyone of claims 12 to 23, 110, 131, 132 or 367-370, wherein the superconductive composition can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 330 is allowed.

CLAIM 331

CLAIM 331 A device according to claim 111, wherein the superconductive transition metal oxide can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 332

Dependent CLAIM 332 is directed to an apparatus according to anyone of claims 183, 217, 218, 274 or 309, wherein the superconductive transition metal oxide can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 333

Dependent CLAIM 333 is directed to a device according to claim 112, wherein the superconductive copper oxide can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 334

Dependent CLAIM 334 is directed to an apparatus according to anyone of claims 275, 276, 310 or 311, wherein the superconductive copper oxide can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 335 is allowed.

CLAIM 336

Dependent CLAIM 336 is directed to an apparatus according to anyone of claims 186, 221, 272, 312 or 413, wherein the superconductive oxide composition can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 337

Dependent CLAIM 337 is directed to a device according to anyone of claims 114 or 117, wherein the transition metal oxide can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 338

Dependent CLAIM 338 is directed to an apparatus according to anyone of claims 24 to 26, 60 to 63, 116, 141 to 143, 172, 187, 222, 232 to 234, 263, 278, 285, 287, 288, 313 or 320, wherein the transition metal oxide can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 339

Dependent CLAIM 339 is directed to a superconductive apparatus according to anyone of claims 27-32, 132 or 370, wherein the transition metal oxide can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 340

Dependent CLAIM 340 is directed to An invention according to claim 118, wherein the transition metal oxide can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 341

Dependent CLAIM 341 is directed to a transition metal oxide device according to claim 128, wherein the transition metal oxide can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 342

Dependent CLAIM 342 is directed to a apparatus according to anyone of claims 40 to 45, wherein the superconductor can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 343

Dependent CLAIM 343 is directed to a device according to anyone of claims 119 or 121, wherein the copper oxide can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 344

Dependent CLAIM 344 is directed to an apparatus according to claim 120, wherein the copper oxide can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 345

Dependent CLAIM 345 is directed to an invention according to claim 122, wherein the copper oxide can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 346

Dependent CLAIM 346 is directed to a superconductive apparatus according to claim 123, wherein the copper oxide can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 347

Dependent CLAIM 347 is directed to a copper oxide device according to claim 129, wherein the copper oxide can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 348

Dependent CLAIM 348 is directed to an apparatus according to anyone of claims 162, 167, 177, 188, 223, 253, 258, 268, 269, 270, 279 or 314, wherein the copper oxide can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 349

Dependent CLAIM 349 is directed to a combination according to claim 57, wherein the superconductive oxide can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 350

Dependent CLAIM 350 is directed to a combination according to anyone of claims 58 or 373, wherein the copper oxide conductor can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 351

Dependent CLAIM 351 is directed to a combination according to claim 59, wherein the ceramic-like material can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 352

Dependent CLAIM 352 is directed to a superconductive combination according to anyone of claims 69 to 71 or 134, wherein the superconductive composition can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 353

Dependent CLAIM 353 is directed to a superconductive apparatus according to anyone of claims 139, 140, 149 to 155, 156 to 161, 170, 171, 175, 176, 180, 181, 205 to 216, 387-393, or 396-401, wherein the superconductive composition can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 354

Dependent CLAIM 354 is directed to an apparatus according to anyone of claims 165, 166, 185, 220, 240 to 246, 247 to 252, 261, 262, 289, 290 to 301, 394, 395, 402-406, 409 or 410, wherein the superconductive composition can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 355

Dependent CLAIM 355 is directed to a combination according to anyone of claims 77 to 81, 186, 379 or 380, wherein the mixed copper oxide composition can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 356

Dependent CLAIM 356 is directed to a device according to anyone of claims 124 to 127, wherein the composition of matter can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 357

Dependent CLAIM 357 is directed to an apparatus according to anyone of claims 190 to 194, 225 to 229, 231, 256, 257, 266, 267, 271, 272, 281 to 284, 317 to 319, 407, or 411 to 413, wherein the composition of matter can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 358 is allowed.

CLAIM 359

Dependent CLAIM 359 is directed to an apparatus according to anyone of claims 195 or 230, wherein the copper oxide composition can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 360

Dependent CLAIM 360 is directed to an apparatus according to anyone of claims 286 or 321, wherein the copper oxide composition can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 361

Independent CLAIM 361 is directed to a superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or an element comprising a rare earth characteristic, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a temperature controller for maintaining the composition at the temperature to exhibit the superconductivity and a current source for passing an electrical superconducting current through the composition while exhibiting the superconductivity.

Support for claim this claim is the same as for claim 1.

CLAIM 362

Independent CLAIM 362 is directed to the superconducting apparatus of claim 361, further including an alkaline earth element substituted for at least one atom of the rare earth or element comprising a rare earth characteristic in the composition.

Support for claim this is the same as for claim 2.

CLAIM 362

Independent CLAIM 363 is directed to the superconducting apparatus of claim 362, where the rare earth or element comprising a rare earth characteristic is selected from the group consisting of La, Nd, and Ce.

Support for claim this is the same as for claim 6.

CLAIM 364

CLAIM 364 The superconducting apparatus of claim 361, where the phase is crystalline with a structure comprising a perovskite characteristic.

Support for claim this is the same as for claim 7.

CLAIM 365

Dependent CLAIM 365 is directed to the superconducting apparatus of claim 362, where the phase is crystalline with a structure comprising a perovskite characteristic.

Support for claim this is the same as for claim 8.

CLAIM 366

Dependent CLAIM 366 is directed to the superconducting apparatus of claim 361, where the phase exhibits a crystalline structure comprising a layered characteristic.

Support for claim this is the same as for claim 9.

CLAIM 367

Dependent CLAIM 367 is directed to the combination of claim 15, where the additional element is a rare earth or an element comprising a rare earth characteristic.

Support for claim this is the same as for claim 17.

CLAIM 368

Dependent CLAIM 368 is directed to the combination of claim 12, where the composition includes a superconducting phase comprising a perovskite characteristic.

Support for claim this is the same as for claim 19.

CLAIM 369

Dependent CLAIM 369 is directed to the combination of claim 20, where the substituted transition metal oxide has a structure comprising a layered characteristic.

Support for claim this is the same as for claim 23.

CLAIM 370

Dependent CLAIM 370 is directed to the superconducting apparatus of claim 31, where the crystalline structure comprises a layered characteristic, enhancing the number of Jahn-Teller polarons in the composite.

Support for claim this is the same as for claim 32.

CLAIM 371

Dependent CLAIM 371 is directed to the superconductive apparatus of claim 48, where the substitutions include a rare earth or an element comprising a rare earth characteristic.

Support for claim this is the same as for claim 52.

CLAIM 372

Independent CLAIM 372 is directed to a superconductive apparatus comprised of a copper oxide comprising a crystalline structure comprising a layered characteristic and at least one additional element substituted in the crystalline structure, the structure being oxygen deficient and exhibiting a superconducting onset temperature greater than or equal to 26°K.

Support for this claim is the same as for claim 53.

CLAIM 373

Independent CLAIM 373 is directed to a combination, comprised of:

a copper oxide superconductor having a superconductor onset temperature greater than about 26°K including an element which results in a mixed valent state in the oxide, the oxide being crystalline and comprising a structure comprising a layered characteristic,

a current source for passing a superconducting current through the copper oxide while it is maintained at a temperature greater than or equal to 26°K and less than the superconducting onset temperature, and

a temperature controller for cooling the copper oxide to a superconductive state at a temperature greater than or equal to 26°K and less than the superconducting onset temperature.

Support for claim this is the same as for claim 58.

CLAIM 374

Independent CLAIM 374 is directed to a combination, comprised of:

a material comprising a ceramic characteristic comprising an onset of superconductivity at an onset temperature greater than or equal to 26°K,

a current source for passing a superconducting electrical current through the material comprising a ceramic characteristic while the material is maintained at a temperature greater than or equal to 26°K and less than the onset temperature, and

a temperature controller for cooling the superconducting material having a ceramic characteristic to a superconductive state at a temperature greater than or equal to 26°K and less than the onset temperature, the material being superconductive at temperatures below the onset temperature and a ceramic at temperatures above the onset temperature.

Support for claim this is the same as for claim 59.

CLAIM 375 is allowed.

CLAIM 376

CLAIM 376 The combination of claim 71, where the mixed copper oxide further includes a rare earth or an element comprising a rare earth characteristic.

Support for claim this is the same as for claim 72.

CLAIM 377 is allowed.

CLAIM 378

CLAIM 378 An apparatus comprising a superconductor having a superconducting onset temperature greater than or equal to 26°K, the superconductor being comprised of a rare earth or an element (RE) comprising a rare earth characteristic, an alkaline earth element (AE), copper (CU), and oxygen (O) and having the general formula RE-AE-CU-O, the superconductor being made by a method comprising the steps of combining the rare earth or element comprising a rare earth characteristic, the alkaline earth element and the copper in the presence of oxygen to produce a mixed copper oxide including the rare earth or rare earth-like element and the alkaline earth element therein, and

heating the mixed copper oxide to produce a superconductor having a crystalline structure comprising a layered characteristic and exhibiting a superconducting onset temperature greater than or equal to 26°K the critical transition temperature of the superconductor being dependent on the amount of the alkaline earth element therein.

Support for claim this is the same as for claim 75.

CLAIM 379 SHOULD BE ALLOWED FOR THE SAME REASON THAT CLAIM 77 IS ALLOWED

Independent CLAIM 379 is directed to a combination, comprising:

a mixed copper oxide composition including an alkaline earth element (AE) and a rare earth or element (RE) comprising a rare earth characteristic, the composition comprising a crystalline structure comprising a layered characteristic and multi-valent oxidation states, the composition exhibiting a substantially zero resistance to the flow of electrical current therethrough when cooled to a superconducting state at a temperature greater than or equal to 26°K, the mixed copper oxide having a superconducting onset temperature greater than or equal to 26°K, and

a current source for passing an electrical superconducting current through the composition when the composition exhibits substantially zero resistance at a temperature greater than or equal to 26°K and less than the onset temperature.

Support is found in original claim 69 at page 46 of the specification and in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and

the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20 and in original claim 42 at page 38 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 380 SHOULD BE ALLOWED FOR THE SAME REASON THAT CLAIM 80 IS ALLOWED

Dependent CLAIM 380 is directed to the combination of claim 379, wherein the crystalline structure comprises a perovskite characteristic.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col.,

lines 14-16 from the bottom “X-ray powder diffractograms ... revealed three individual crystallographic phases.” In the conclusion at page 192 the article states “[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure.”

CLAIM 381 is allowed.

CLAIM 382

Dependent CLAIM 382 is directed to the apparatus of claim 93, where the copper oxide material exhibits a crystalline structure comprising a layered characteristic.

Support for claim this is the same as for claim 94.

CLAIM 383

Independent CLAIM 383 is directed to a superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition comprising a copper-oxide compound having a crystal structure comprising a perovskite characteristic and a layered characteristic, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a current source for causing an electric current to flow in the superconductor element.

Support for claim this is the same as for claim 96.

CLAIMS 384 to 388 are allowed.

CLAIM 389

Independent CLAIM 389 is directed to a superconductive apparatus for causing electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) causing an electric current to flow in the superconductor element.

Support for claim this is the same as for claim 149.

CLAIMS 390 to 383 are allowed.

CLAIM 394

Independent CLAIM 394 is directed to an apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, the superconductive composition includes at least one element selected from the group consisting of a Group II A element, a rare earth element; and a Group III B element;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

Support for claim this is the same as for claim 165.

CLAIM 395

Independent CLAIM 395 is directed to an apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity

intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk- resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

Support for claim this is the same as for claim 166.

CLAIMS 396 to 401 are allowed.

CLAIM 402

Independent CLAIM 402 is directed to an apparatus capable of carrying electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the composition comprising a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

Support for claim this is the same as for claim 240.

CLAIMS 403 to 406 are allowed.

CLAIM 407

CLAIM 407 An apparatus capable of carrying an electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, the superconductive composition includes at least one element selected from the group consisting of a Group II A element, a rare earth element; and a Group III B element;
- (b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

Support for claim this is the same as for claim 256.

CLAIM 408

Independent CLAIM 408 is directed to an apparatus capable of carrying an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

Support for claim this is the same as for claim 257.

CLAIMS 409 to 413 are allowed.

CLAIM 414

Dependent CLAIM 414 is directed to a superconducting apparatus according to anyone of claims 361-365 or 366, wherein the composition can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 415

Dependent CLAIM 415 is directed to a superconducting combination according to anyone of claims 367, 368 or 369, wherein the composition can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 416

Dependent CLAIM 416 is directed to a superconducting apparatus according to anyone of claims 370 or 371, wherein the composition can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 417

Dependent CLAIM 417 is directed to a superconducting apparatus according to claim 372, wherein the copper oxide can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 418

Dependent CLAIM 418 is directed to a combination according to claim 373, wherein the copper oxide can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 419

Dependent CLAIM 419 is directed to a combination according to claim 374, wherein the material can be made by known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 420

Dependent CLAIM 420 is directed to a apparatus according to claim 375, wherein the composition can be made by known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 421

Dependent CLAIM 421 is directed to a combination according to claim 376, wherein the mixed copper oxide can be made by known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 422

Dependent CLAIM 422 is directed to a combination according to anyone of claims 379 or 380, wherein the mixed copper oxide can be made by known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 423

Dependent CLAIM 423 is directed to a apparatus according to claim 382, wherein the copper oxide material can be made by known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 424

Dependent CLAIM 424 is directed to a superconductive apparatus according to anyone of claims 383, 384, 385, 386, 387 and 389, wherein the composition can be made by known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 425

Dependent CLAIM 425 is directed to a apparatus according to claim 388, wherein the composition can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 426

Dependent CLAIM 426 is directed to a superconductive apparatus according to anyone of claims 389 to 400 or 401, wherein the superconductive composition can be made by known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 427

Dependent CLAIM 427 is directed to a apparatus according to anyone of claims 402 to 412 or 413, wherein the superconductive composition can be made by known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 428

Independent CLAIM 428 is directed to an apparatus capable of carrying electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

a superconductive element comprising a superconductive composition, the superconductive composition comprising O and at least one element selected from the group consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu; and

the composition comprising a superconductor transition temperature T_c of greater than or equal to 26°K.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification. The alkaline earth and rare earth elements include Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu,

CLAIM 429

Dependent CLAIM 429 is directed to an apparatus according to claim 428, further including:

a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

a source of an electric current to flow in the superconductor element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

CLAIM 430

Dependent CLAIM 430 is directed to an apparatus according to claim 428, wherein the composition comprises a substantially layered structure.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three

individual crystallographic phases.” In the conclusion at page 192 the article states “[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure.”

CLAIM 431

Dependent CLAIM 431 is directed to an apparatus according to claim 429, wherein the composition comprises a substantially layered structure.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants’ article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom “X-ray powder diffractograms ... revealed three individual crystallographic phases.” In the conclusion at page 192 the article states “[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure.”

CLAIM 432

Dependent CLAIM 432 is directed to an apparatus according to anyone of claims 428 to 430 or 431, wherein the composition comprises a substantially perovskite crystal structure.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants’ article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom “X-ray powder diffractograms ... revealed three

individual crystallographic phases.” In the conclusion at page 192 the article states “[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure.”

CLAIM 433

Dependent CLAIM 433 is directed to an apparatus according to any one of claims 428 to 430 or 431, wherein the composition comprises a perovskite-like structure.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants’ article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom “X-ray powder diffractograms ... revealed three individual crystallographic phases.” In the conclusion at page 192 the article states “[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure.”

CLAIM 434

Dependent CLAIM 434 is directed to an apparatus according to any one of claims 428 to 430 or 431, wherein the composition comprises a perovskite characteristic.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants’ article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col.,

lines 14-16 from the bottom “X-ray powder diffractograms ... revealed three individual crystallographic phases.” In the conclusion at page 192 the article states “[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure.”

CLAIM 435

Dependent CLAIM 435 is directed to an apparatus according to any one of claims 428 to 430 or 431, wherein the composition comprises a perovskite related structure.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants’ article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom “X-ray powder diffractograms ... revealed three individual crystallographic phases.” In the conclusion at page 192 the article states “[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure.”

CLAIM 436

Dependent CLAIM 436 is directed to an apparatus according to anyone of claims 428 to 431 or 432, wherein the composition can be made according to known principals of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 437

Dependent CLAIM 437 is directed to an apparatus according to claim 88 wherein the composition is an oxide.

Support can be found in the specification at page 11, line 19-24; page 15, line 10-15; and original claim 46 at page 39.

CLAIM 438

Independent CLAIM 438 is directed to an apparatus comprising: a means for conducting a superconducting current at a temperature greater than or equal to 26°K and a current source for providing an electric current to flow in the means for conducting a superconducting current.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20 line 1 to page 21, line 2 and page 18, line 20. Means for conducting a superconducting current at a temperature greater than or equal to 26°K are described at page 3, line 1 to page 28, line 5 of the specification. Means for providing an electric current is a conventionally used source or current shown in Fig. 1 as the combination of elements 2 and 18.

CLAIM 439

Dependent CLAIM 439 is directed to an apparatus according to claim 438, wherein the means for conducting a superconductive current comprises a T_c greater than or equal to 26°K.

Support can be found in the sentence bridging pages 5 and 6 of the specification.

CLAIM 440

Dependent CLAIM 440 is directed to an apparatus according to claim 438, further including a temperature controller for maintaining the means for conducting a superconducting current at the temperature.

Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

CLAIM 443

CLAIM 441 An apparatus according to anyone of claims 438, 439 or 440, wherein the means for conducting a superconducting current comprises oxygen.

Support can be found in the specification at page 11, line 19-24; page 15, line 10-15; and original claim 46 at page 39.

CLAIM 442

Dependent CLAIM 442 is directed to an apparatus according to anyone of claims 438, 439 and 440, wherein the means for conducting a superconducting current comprises one or more of the groups consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification. The alkaline earth and rare earth elements include Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu.

CLAIM 443

Dependent CLAIM 443 is directed to an apparatus according to anyone of claims 438, 439 or 440, wherein the means for conducting a superconducting current comprises one or more of Be, Mg, Ca, Sr, Ba and Ra and one or more of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification. The alkaline earth and rare earth elements include Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu.

CLAIM 444

Dependent CLAIM 444 is directed to an apparatus according to anyone of claims 438, 439 and 440, wherein the means for conducting a superconducting current comprises a layered structure.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 445

Dependent CLAIM 445 is directed to An apparatus according to anyone of claims 438, 439 and 440, wherein the means for conducting a superconducting current comprises a substantially perovskite structure.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 446

Dependent CLAIM 446 is directed to an apparatus according to anyone of claims 438, 439 and 440, wherein the means for conducting a superconducting current comprises a perovskite-like structure.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 447

Dependent CLAIM 447 is directed to an apparatus according to anyone of claims 438, 439 and 440, wherein the means for conducting a superconducting current comprises a perovskite related structure.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 448

Dependent CLAIM 448 is directed to an apparatus according to anyone of claims 438, 439 and 440, wherein the means for conducting a superconducting current comprises a structure having a perovskite characteristic.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 449

Dependent CLAIM 449 is directed to an apparatus according to anyone of claims 438, 439 and 440, wherein the means for conducting a superconducting current comprises a transition metal.

Support can be found in original claims 40 and 41 at page 38, original claims 88 and 90 at page 54 of the specification.

CLAIM 450

Dependent CLAIM 450 is directed to an apparatus according to anyone of claims 438, 439 and 440, wherein the means for conducting a superconducting current comprises a copper oxide.

Support can be found in original claims 24 and 26 on pages 23 – 24 of the specification.

CLAIM 451

Dependent CLAIM 451 is directed to an apparatus according to anyone of claims 438, 439 and 440, wherein the means for conducting a superconducting current comprises oxygen in a nonstoichiometric amount.

Support can be found at Page 11, lines 9-16, page 26 line 13 – 15, original claim 81 and 82 page 51, original claim 84 at page 52, original claim 86 at page 52-53 of the specification.

CLAIM 452

Dependent CLAIM 452 is directed to an apparatus according to anyone of claims 438, 439 and 440, wherein the means for conducting a superconducting current comprises a multivalent transition metal.

Support can be found in original claim 66 at pages 45-46 of the specification.

CLAIM 453

Dependent CLAIM 453 is directed to an apparatus according to anyone of claims 438, 439 or 440, wherein the means for conducting a superconducting current can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 454

Dependent CLAIM 454 is directed to an apparatus according to claim 441, wherein the means for conducting a superconducting current can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 455

Dependent CLAIM 455 is directed to an apparatus according to claim 442, wherein the means for conducting a superconducting current can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 456

Dependent CLAIM 456 is directed to an apparatus according to claim 443, wherein the means for conducting a superconducting current can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 457

Dependent CLAIM 457 is directed to an apparatus according to claim 444, wherein the means for conducting a superconducting current can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 458

Dependent CLAIM 458 is directed to an apparatus according to claim 445, wherein the means for conducting a superconducting current can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 459

Dependent CLAIM 459 is directed to an apparatus according to claim 446, wherein the means for conducting a superconducting current can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 460

Dependent CLAIM 460 is directed to an apparatus according to claim 447, wherein the means for conducting a superconducting current can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 461

Dependent CLAIM 461 is directed to an apparatus according to claim 448, wherein the means for conducting a superconducting current can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 462

Dependent CLAIM 462 is directed to an apparatus according to claim 449, wherein the means for conducting a superconducting current can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 463

Dependent CLAIM 463 is directed to an apparatus according to claim 450, wherein the means for conducting a superconducting current can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 464

Dependent CLAIM 464 is directed to an apparatus according to claim 451, wherein the means for conducting a superconducting current can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 465

Dependent CLAIM 465 is directed to an apparatus according to claim 452, wherein the means for conducting a superconducting current can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 466

Independent CLAIM 466 is directed to an apparatus comprising:

a superconductive current carrying element comprising a T_c greater than or equal to 26 K

the superconductive current carrying element comprises a property selected from one or more of the group consisting of a mixed valent oxide, a transition metal, a mixed valent transition metal, a perovskite structure, a perovskite-like structure, a perovskite related structure, a layered structure, a stoichiometric or nonstoichiometric oxygen contents and a dopant.

Support is found in original claim 64 at pages 44 to 45 of the specification and in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

Support can be found at Page 11, lines 9-16, page 26 line 13 – 15, original claim 81 and 82 page 51, original claim 84 at page 52, original claim 86 at page 52-53 of the specification.

Support can be found in original claims 40 and 41 at page 38, original claims 88 and 90 at page 54 of the specification.

Support is at original claim 36 at page 36 of the specification. Support is found at page 26, lines 1-15 of the specification. Support is found in original claim 44 on page 38 of the specification and original claim 39 at page 37 of the specification.

Support is found in original claim 32 at page 35 of the specification.
Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 466

Dependent CLAIM 467 is directed to an apparatus according to claim 466, wherein the superconductive current carrying element is at a temperature greater than or equal to 26 K

Support can be found in original claim 58 at pages 42 -43 and at Page 4, lines 10 -21 of the specification

CLAIM 468

Dependent CLAIM 468 is directed to an apparatus according to claim 466, further including a temperature controller for maintaining the superconductive current carrying element at a temperature less than the T_c .

Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

CLAIM 469

Dependent CLAIM 469 is directed to an apparatus according to anyone of claims 466, 467 or 468, wherein the superconductive current carrying element comprises one or more of the group consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification. The alkaline earth and rare earth elements include Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu.

CLAIM 470

Dependent CLAIM 470 is directed to an apparatus according to anyone of claims 466, 467 or 468, wherein the superconductive current carrying element comprises one or more of Be, Mg, Ca, Sr, Ba and Ra and one or more of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is

found in original claim 81 at page 51 of the specification. The alkaline earth and rare earth elements include Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu.

CLAIM 471

Dependent CLAIM 471 is directed to an apparatus according to claim 469, wherein the superconductive current carrying element comprises a transition metal.

Support can be found in original claims 40 and 41 at page 38, original claims 88 and 90 at page 54 of the specification.

CLAIM 472

Dependent CLAIM 472 is directed to an apparatus according to claim 470, wherein the superconductive current carrying element comprises a transition metal

Support can be found in original claims 40 and 41 at page 38, original claims 88 and 90 at page 54 of the specification.

CLAIM 473

Dependent CLAIM 473 is directed to an apparatus according to anyone of claims 466, 467, or 468, wherein the superconducting current carrying element can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 473

Dependent CLAIM 474 is directed to an apparatus according to of claim 471, wherein the superconducting current carrying element can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 475

Dependent CLAIM 475 is directed to an apparatus according to of claim 472, wherein the superconducting current carrying element can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 476

Independent CLAIM 476 is directed to an apparatus comprising:

a superconductive current carrying element comprising a T_c greater than or equal to 26 K;

the superconductive current carrying element comprises an oxide, a layered perovskite structure or a layered perovskite-like structure and comprises a stoichiometric or nonstoichiometric oxygen content.

Support can be found at Page 11, lines 9-16, page 26 line 13 – 15, original claim 81 and 82 page 51, original claim 84 at page 52, original claim 86 at page 52-53 of the specification.

Support is found in original claim 32 at page 35 of the specification.
Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 477

Dependent CLAIM 477 is directed to an apparatus according to claim 476, wherein the superconductive current carrying element is at a temperature greater than or equal to 26 K.

Support can be found in original claim 58 at pages 42 -43 and at Page 4, lines 10 -21 of the specification

CLAIM 478

Dependent CLAIM 478 is directed to an apparatus according to claim 476, further including a temperature controller for maintaining the superconductive current carrying element at a temperature less than the T_c .

Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

CLAIM 479

Dependent CLAIM 479 is directed to an apparatus according to anyone of claims 476, 477 or 478, wherein the superconductive current carrying element comprises one or more of the group consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification. The alkaline earth and rare earth elements include Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu.

CLAIM 480

CLAIM 480 An apparatus according to anyone of claims 476, 477 or 478, wherein the superconductive current carrying element comprises one or more of Be, Mg, Ca, Sr, Ba and Ra and one or more of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification. The alkaline earth and rare earth elements include Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu.

CLAIM 481

Dependent CLAIM 481 is directed to an apparatus according to claim 479, wherein the superconductive current carrying element comprises a transition metal.

Support can be found in original claims 40 and 41 at page 38, original claims 88 and 90 at page 54 of the specification.

CLAIM 482

Dependent CLAIM 482 is directed to an apparatus according to claim 480, wherein the superconductive current carrying element comprises a transition metal.

Support can be found in original claims 40 and 41 at page 38, original claims 88 and 90 at page 54 of the specification.

CLAIM 483

Dependent CLAIM 483 is directed to an apparatus according to claim 476, wherein the superconductive current carrying element comprises copper oxide.

Support can be found in original claims 24 and 26 on pages 23 – 24 of the specification.

CLAIM 484

Dependent CLAIM 484 is directed to an apparatus according to anyone of claims 476, 477 or 478, wherein the superconductive current carrying element can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 485

Dependent CLAIM 485 is directed to an apparatus according to claim 479, wherein the superconductive current carrying element can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 486

Dependent CLAIM 486 directed to an apparatus according to claim 480, wherein the superconductive current carrying element can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 487

Dependent CLAIM 487 is directed to an apparatus according to claim 481, wherein the superconductive current carrying element can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 488

Dependent CLAIM 488 is directed to an apparatus according to claim 482, wherein the superconductive current carrying element can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 489

Dependent CLAIM 489 is directed to an apparatus according to claim 483, wherein the superconductive current carrying element can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 490

Dependent CLAIM 490 is directed to an apparatus according to claim 484, wherein the superconductive current carrying element can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 491

Dependent CLAIM 491 is directed to an apparatus according to claim 485, wherein the superconductive current carrying element can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 492

CLAIM 492 The superconducting apparatus of claim 361, where the phase is crystalline with a structure comprising a perovskite related structure.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 493

Dependent CLAIM 493 is directed to the superconducting apparatus of claim 362, where the phase is crystalline with a structure comprising a perovskite related structure.

Support is found in original claim 32 at page 35 of the specification.
Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 494

Dependent CLAIM 494 is directed to the combination of claim 12, where the composition includes a superconducting phase comprising a perovskite related structure.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 495

Dependent CLAIM 495 is directed to the combination of claim 379, wherein the crystalline structure comprises a perovskite related structure.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three

individual crystallographic phases.” In the conclusion at page 192 the article states “[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure.”

CLAIM 496

Independent CLAIM 496 is directed to a superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition comprising a copper-oxide compound having a crystal structure comprising a perovskite related structure and a layered characteristic, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a current source for causing an electric current to flow in the superconductor element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20 line 1 to page 21, line 2 and page 18, line 20. Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

CLAIM 497

Independent CLAIM 497 is directed to a superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including at least one rare-earth or element comprising a rare earth characteristic and at least one alkaline-earth element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{q=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{q=0}$ of the superconductive composition; and

(c) a current source for causing an electric current to flow in the superconductor element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

CLAIM 498

Independent CLAIM 498 is directed to a superconductive apparatus for causing electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) causing an electric current to flow in the superconductor element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 499

Independent CLAIM 499 is directed to a superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including at least one rare-earth or rare-earth-like element and at least one alkaline-earth element, the composition having a superconductive/resistive-transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk- resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 500

Independent CLAIM 500 is directed to an apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, the superconductive composition includes at least one element selected from the group consisting of a Group II A element, a rare earth element; and a Group III B element;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 501

Independent CLAIM 501 is directed to an apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity

intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk- resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article

states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIMS 502 to 507 are allowed.

CLAIM 508

CLAIM 508 An apparatus capable of carrying electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition comprising a superconductor transition temperature T_c of greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 509

Independent CLAIM 509 is directed to an apparatus capable of carrying an electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, the superconductive composition includes at least one element selected from the group consisting of a Group II A element, a rare earth element; and a Group III B element;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 510

Independent CLAIM 510 is directed to an apparatus capable of carrying an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition;
- (c) a source of an electric current to flow in the superconductor element.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIMS 511 to 515 are allowed.

CLAIM 516

CLAIM 516 An apparatus of claim 146 wherein the means for carrying a superconductive current is comprised of an oxide.

Support can be found at Page 11, lines 9-16, page 26 line 13 – 15, original claim 81 and 82 page 51, original claim 84 at page 52, original claim 86 at page 52-53, original claims 40 and 41 at page 38 and original claims 88 to 90 at pages 53 - 54 of the specification. ,

CLAIM 517

Independent CLAIM 517 is directed to an apparatus comprising:

a superconductive current carrying element comprising a T_c greater than or equal to 26 K

the superconductive current carrying element comprises a metallic, oxygen-deficient, perovskite-like, mixed valent copper compound.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 518

Dependent CLAIM 518 is directed to an apparatus according to claim 517, wherein the superconductive current carrying element is at a temperature greater than or equal to 26 K

Support can be found in original claim 58 at pages 42 -43 and at Page 4, lines 10 -21 of the specification

CLAIM 519

Dependent CLAIM 519 is directed to an apparatus according to claim 517, further including a temperature controller for maintaining the superconductive current carrying element at a temperature less than the T_c .

Support can be found in original claim 58 at pages 42 -43 and at Page 4, lines 10 -21 of the specification

CLAIM 520

Dependent CLAIM 520 is directed to an apparatus according to anyone of claims 517, 518 or 519, wherein the superconductive current carrying element comprises one or more of the group consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification. The alkaline earth and rare earth elements include Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu.

CLAIM 521

Dependent CLAIM 521 is directed to an apparatus according to anyone of claims 517, 518 or 519, wherein the superconductive current carrying element comprises one or more of Be, Mg, Ca, Sr, Ba and Ra and one or more of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification. The alkaline earth and rare earth elements include Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu.

CLAIM 522

Independent CLAIM 522 is directed to an apparatus comprising:

a superconductive current carrying element comprising a T_c greater than or equal to 26 K;

the superconductive current carrying element comprises a composition that can be made according to known principles of ceramic science.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, page 12 lines 6-8 and page 18, line 20 and in original claim 42 at page 38 of the specification. Support is found in original claim 10 at page 31 of the specification.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 523

Dependent CLAIM 523 is directed to an apparatus according to claim 522, wherein the superconductive current carrying element is at a temperature greater than or equal to 26 K.

Support can be found in original claim 58 at pages 42 -43 and at Page 4, lines 10 -21 of the specification.

CLAIM 524

Dependent CLAIM 524 is directed to an apparatus according to claim 523, further including a temperature controller for maintaining the superconductive current carrying element at a temperature less than the T_c .

Support can be found in original claim 58 at pages 42 -43 and at Page 4, lines 10 -21 of the specification

CLAIM 525

CLAIM 525 An apparatus according to anyone of claims 522, 523 or 524, wherein the superconductive current carrying element comprises one or more of the group consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is

found in original claim 81 at page 51 of the specification. The alkaline earth and rare earth elements include Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu.

CLAIM 526

CLAIM 526 An apparatus according to anyone of claims 522, 523 or 524, wherein the superconductive current carrying element comprises one or more of Be, Mg, Ca, Sr, Ba and Ra and one or more of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

Support is found in the specification page 3, lines 10-15, page 5, line 1 to page 6, line 14, the paragraph bridging pages 6 and 7 of the specification. Support is found in original claim 81 at page 51 of the specification. The alkaline earth and rare earth elements include Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu.

CLAIM 527

Dependent CLAIM 527 is directed to an apparatus according to claim 525, wherein the superconductive current carrying element comprises a transition metal.

Support can be found in original claims 40 and 41 at page 38, original claims 88 and 90 at page 54 of the specification.

CLAIM 528

Dependent CLAIM 528 is directed to an apparatus according to claim 526, wherein the superconductive current carrying element comprises a transition metal.

Support can be found in original claims 40 and 41 at page 38, original claims 88 and 90 at page 54 of the specification.

CLAIM 529

Dependent CLAIM 529 is directed to an apparatus according to claim 522, wherein the superconductive current carrying element comprises copper oxide.

Support can be found in original claims 24 and 26 on pages 23 – 24 of the specification.

CLAIM 529

Dependent CLAIM 530 is directed to an apparatus according to anyone of claims 522, 523 or 524, wherein the superconductive current carrying element is substantially perovskite.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 531

Dependent CLAIM 531 is directed to an apparatus according to anyone of claims 522, 523 or 524, wherein the superconductive current carrying element comprises a perovskite-like structure.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 532

Dependent CLAIM 532 is directed to an apparatus according to anyone of claims 522, 523 or 524, wherein the superconductive current carrying element comprises a perovskite related structure.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 533

Dependent CLAIM 533 is directed to an apparatus according to anyone of claims 522, 523 or 524, wherein the superconductive current carrying element comprises a nonstoichiometric amount of oxygen.

Support can be found at Page 11, lines 9-16, page 26 line 13 – 15, original claim 81 and 82 page 51, original claim 84 at page 52, original claim 86 at page 52-53 of the specification.

CLAIM 534

Dependent CLAIM 534 is directed to an apparatus according to anyone of claims 522, 523 or 524, wherein the superconductive current carrying element comprises a layered structure.

Support is found in original claim 32 at page 35 of the specification.

Support is found in original claim 9 at page 30 of the specification.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 535

Independent CLAIM 535 is directed to an apparatus comprising a superconductor exhibiting a superconducting onset at an onset temperature greater than or equal to 26°K, the superconductor being comprised of at least four elements, none of which is a means for carrying a superconducting current at a temperature greater than or equal to 26°K, a temperature controller for maintaining the superconductor at an operating temperature in excess of the onset temperature to maintain the superconductor in a superconducting state and a current source for passing current through the superconductor while in the superconducting state.

Support is found in original claim 40 at page 38 of the specification and in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50),

84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20. Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

CLAIM 536

CLAIM 536 is directed to an apparatus comprising:

a means for carrying a superconductive current exhibiting a superconductive state at a temperature greater than or equal to 26°K,

a cooler for cooling the composition to a temperature greater than or equal to 26°K at which temperature the means for carrying a superconductive current exhibits the superconductive state, and

a current source for passing an electrical current through the composition while the composition is in the superconductive state.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20 line 1 to page 21, line 2 and page 18, line 20. Means for conducting a superconducting current at a temperature greater than or equal to 26°K are described at page 3, line 1 to page 28, line 5 of the specification. Means for providing an electric

current is a conventionally used source or current shown in Fig. 1 as the combination of elements 2 and 18.

Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

CLAIM 537

Independent CLAIM 537 is directed to an apparatus comprising:

a metallic, oxygen-deficient, perovskite-like, mixed valent transition metal composition exhibiting a superconductive state at a temperature greater than or equal to 26°K,

a temperature controller maintaining the composition at a temperature greater than or equal to 26°K at which temperature the composition exhibits the superconductive state, and

a current source passing an electrical current through the composition while the composition is in the superconductive state.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20 line 1 to page 21, line 2 and page 18, line 20. Means for conducting a superconducting current at a temperature greater than or equal to 26°K are described at page 3, line 1 to page 28, line 5 of the specification. Means for providing an electric current is a conventionally used source or current shown in Fig. 1 as the combination of elements 2 and 18.

Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

Support is found in Applicants' article, which is incorporated in Applicants specifications at page 6 (Brief Attachment AX) states at page 190, left Col., lines 14-16 from the bottom "X-ray powder diffractograms ... revealed three individual crystallographic phases." In the conclusion at page 192 the article states "[t]he system consists of three phases, one of them having a metallic perovskite-type layer-like structure."

CLAIM 538

Dependent CLAIM 538 is directed to the apparatus of claim 537, where the means for carrying a superconductive current is comprised of a metal oxide.

Support is in original claim 89 on page 54 of the specification.

CLAIM 539

Dependent CLAIM 539 is directed to the apparatus of claim 537, where the means for carrying a superconductive current is comprised of a transition metal oxide.

Support is in original claim 90 on page 54 of the specification.

CLAIM 540

Independent CLAIM 540 is directed to an apparatus comprising:

a composition comprising oxygen exhibiting a superconductive state at a temperature greater than or equal to 26°K, a temperature controller for maintaining the composition at a temperature greater than or equal to 26°K at which temperature the composition exhibits the superconductive state, and

a source of an electrical current through the composition while the composition is in the superconductive state.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20 line 1 to page 21, line 2 and page 18, line 20. Means for conducting a superconducting current at a temperature greater than or equal to 26°K are described at page 3, line 1 to page 28, line 5 of the specification. Means for providing an electric current is a conventionally used source or current shown in Fig. 1 as the combination of elements 2 and 18.

Support is in the specification at page 4, lines 10-21; page 23, line 1-9; and the paragraph bridging pages 2 and 3.

CLAIM 541

Dependent CLAIM 541 is directed to an apparatus according to claim 540, where the composition is comprised of a metal oxide.

Support is in original claim 89 on page 54 of the specification.

CLAIM 542

Dependent CLAIM 542 is directed to an apparatus according to claim 541, where the composition is comprised of a transition metal oxide.

Support is in original claim 90 on page 54 of the specification.

CLAIM 543

Independent CLAIM 543 is directed to a combination, comprising:

an oxygen containing composition exhibiting the onset of a DC substantially zero resistance state at an onset temperature in excess of 30°K, and

a current source for passing an electrical current through the composition while it is in the substantially zero resistance state.

Support is found at page 10, lines 1-3, page 20, lines 1-5 of the specification.

Support is found in original claims 1 (page 29), 12 (page 31), 24 (pages 33-34), 36 (page 36), 55 (page 41), 58 (page 42), 59 (page 43), 64 (pages 44-45), 69 (page 46), 77 (pages 49-50), 84 (page 52) and 88 (page 53 to 54) (of the specification) and 88 (page 53 to 54), the title at page 1 of the specification and Fig. 1 elements 20, 18 and 16 thereof and the description at page 4, lines 10 to 21, at page 20, line 1 to page 21, line 2, and page 18, line 20 and in original claim 42 at page 38 of the specification.

Means for providing an electric current is a conventionally used source or current shown in Fig, 1 as the combination of elements 2 and 18.

**CLAIMS 544 TO 550 WERE ADDED BY THE TWELFTH SUPPLEMENTARY
RESPONSE WHICH WAS NOT ENETERED WHEN THIS APPEAL BRIEF
WAS FILED**

CLAIM 544

Dependent CLAIM 544 is directed to an apparatus according to claim 535, wherein said superconductor can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 545

Dependent CLAIM 545 is directed to an apparatus according to claim 536, wherein said means for carrying a superconductive current can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 546

Dependent CLAIM 546 is directed to an apparatus according to any one of claims 537, 538 or 539 wherein said composition can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 547

Dependent CLAIM 547 is directed to an apparatus according to any one of claims 540, 541 or 542 wherein said composition can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 548

Dependent CLAIM 548 is directed to a combination according to claim 543, wherein said composition can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 549

Dependent CLAIM 549 is directed to an apparatus according to anyone of claims 496 to 514 or 515, wherein said superconductive element can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 550

Dependent CLAIM 550 is directed to an apparatus according to claim 516, wherein said means for carrying a superconductive current can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

CLAIM 551

Dependent CLAIM 551 is directed to an apparatus according to anyone of claims 517 to 520 or 521, wherein said superconductive current carrying element can be made according to known principles of ceramic science.

Support is found in the specification at page 8, lines 19-13 and page 15, line 20-23.

Please charge any fee necessary to enter this paper and any previous paper to
deposit account 09-0468.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'D. P. Morris', written over a horizontal line.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Applicants: Bednorz et al.

Serial No.: 08/479,810

Filed: June 7, 1995

For: NEW SUPERCONDUCTIVE COMPOUNDS HAVING HIGH TRANSITION
TEMPERATURE, METHODS FOR THEIR USE AND PREPARATION

Date: November 27, 2006

Docket: YO987-074BZ

Group Art Unit: 1751

Examiner: M. Kopec

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

Part VII

CFR 37 §41.37(c)(1)(vii)

Argument For the Patentability of Each Rejected Claim

VOLUME 3

PRELIMINARY COMMENTS A

All the claims are individually appealed except that the following claims are grouped in claims:

1, 361
2, 362
6, 363
7, 364
8, 365
9, 366
17, 367
19, 368
23, 369
32, 370
52, 371
53, 372
58, 373
59, 374
72, 376
73, 377
75, 378
82, 381
94, 382
96, 383
149, 389
165, 394
166, 395
240, 402
256, 407
257, 408

Claim 379 should be allowed for the same reason that claim 77 is allowed.

Claim 380 should be allowed for the same reason that claim 80.

That is they recite a transition metal oxide continuity at least a) an alkaline earth element for Group II A element and b) a rare-earth element or Group III B element.

PRELIMINARY COMMENTS B

Each rejected claim is appealed individually. In this part arguments are provided, for each claim individually, for why each claim is enabled in view of Applicants' teaching. Applicants do not rely on these enablement statements to provide a teaching that is missing from Applicants' teaching, but they corroborate the truth of Applicants' teaching and are therefore evidence that Applicants' claims are fully enabled by Applicants' teaching. For convenience in the comments Applicants will use the following shorthand notation which are defined below:

- Examiners' First Enablement Statement
- Examiners' Second Enablement Statement
- Examiners' Third Enablement Statement
- Poole 1988 Enablement Statement
- Poole 1995 Enablement Statement
- Poole 1996 Enablement Statement
- Schuller Enablement Statement
- Rao enablement Statement

EXAMINER'S FIRST ENABLEMENT STATEMENT

At page 8 of the Final Action the Examiner states (this is referred to herein as the Examiner's First Enablement Statement):

The Examiner does not deny that the instant application includes "all know principles of ceramic science", or that once a person of skill in the art knows of a specific type of composition which is superconducting at greater than or equal to 26K, such a person of skill in the art, using the techniques described in the application, which included all principles of ceramic fabrication known at the time the application was initially filed, can make the known superconductive compositions. The numerous 1.132 declarations, such as those of Mitzi, Shaw, Dinger and Duncombe, and the Rao article, are directed to production of know superconductive materials. (Emphasis in the original)

Thus the Examiner agrees that "a person of skill in the art, using the techniques described in the application, which included all principles of ceramic fabrication known at the time the application was initially filed, can make the

known superconductive compositions." The principals of ceramic science taught by Applicants to fabricate high Tc Superconductors were known long before Applicants' discovery.

EXAMINER'S SECOND ENABLEMENT STATEMENT

The Examiner has essentially said this by rejecting Applicants' non-allowed claims as anticipated under §102(a) or obvious under §103(a) in view of the Asahi Shinbum article (Brief Attachment AV) at page 16 of the Office Action dated 07/30/1998. In regards to the rejection of claims 1, 13-31, 33-38, 40-46, 55-59, 64, 67-72, 77-81, 84-86, 91-96, 103, 109, 111-116, 119, 120 and 124 under 35 USC 103(a) over the Asahi Shinbum article the Examiner states at page 17 of the Office Action dated 07/30/1998 "based on the teachings of the Asahi Shinbum article as a whole, it would have been obvious to one of such skill because that reference teaches superconductivity in an oxide compound of La and Cu with Ba having a structure of the so-called perovskite structure". In the Office Action of 07/30/1998 claim 123 was allowed over the Asahi Shinbum article because it showed criticality for the formula recited in this claim.

The English translation of the Ashai Shinbum Article is page 2 of Brief Attachment AV.

The Asahi Shinbum article states in the first paragraph:

A new ceramic with a very high Tc of 30K of the superconducting transition has been found. The possibility of high Tc - superconductivity has been reported by scientists in Switzerland this spring. The group of Prof. Shoji TANAKA, Dept. Appl. Phys. Faculty of Engineering at the University of Tokyo confirmed in November, that this is true.

and in the second paragraph:

The ceramic newly discovered, is an oxide compound of La and Cu with Barium which has a structure of the so-called perovskite and shows metal-like properties. Prof. Tanaka's laboratory confirmed that this material shows

diamagnetism (Meisner effect) which is the most important indication of the existence of superconductivity.

The Swiss scientist are the inventors (Applicants) of the present application. Thus this clearly refers to Applicants' work which was reported in Applicants' article (Brief Attachment AX) which is incorporated by reference in the present application. These passages say that Prof. Tanaka confirmed Applicants' work. The newly discovered ceramic referred to in the article is the ceramic reported on in Applicants' article. **It is thus clear that for the Examiner to have rejected Applicants' claim over the Asahi Shinbum article under 35 USC 103, the Examiner necessarily had to find that Applicants' article fully enabled their claims.** (This is the Examiner's Second Enablement Statement) The 35 USC 103 rejection over the Asahi Shinbum article was overcome by Applicants swearing behind the date of the Ashai Shinbum article.

EXAMINER'S THIRD ENABLEMENT STATEMENT

In the 07/053,307 ancestral application, in Office Action dated 04/20/91 (Brief Attachment AR) composition claims 1, 2, 5 through 11 inclusive, 40 through 44 inclusive, 46, 48, 51 through 54 inclusive, 60, 62, and 66 were finally rejected under 35 U.S.C. 102(b) or in the alternative under 35 U.S.C. 103 as unpatentable over seven prior art references. Applicants rebutted the Examiner's reasons for rejection based on limitations in the claims directed to Applicants' new discovery of the superconductive properties of these materials. In the 07/053,307 ancestral application final Office Action the Examiner asserted that the cited references appeared to disclose materials, which inherently provided superconductive properties and consequently therefore, rendered the composition claims unpatentable. Since a rejection of the composition of matter claims reciting the high T_c property based on inherency necessarily requires that the recited alleged inherent claimed high T_c property is a necessary consequence of the prior art description of compositions of matter, the rejection for inherency necessarily requires that a person of skill in the art be able to make

the compositions of matter described in the prior art which necessarily means that it was and is the Examiner's position that a person of skill in the art is enabled to make high Tc compositions of matter. **This is the Examiner's Third Enablement Statement.** Applicants claims under appeal are directed to an apparatus, device, structure, etc. using high Tc compositions of matter and based on the Examiner's Third Enablement Statement these claims are enabled.

POOLE 1988 ENABLEMENT STATEMENT

The chemistry involved in the process of making high Tc superconductor compositions does not have to be understood to fabricate samples as stated in the book "Copper Oxide Superconductors" by Charles P. Poole, et al. 1988 (See 48 of DST AFFIDAVITS (Brief Attachment AM, AN and AO and Brief Attachment AW) which states at page 59:

[c]opper oxide superconductors with a purity sufficient to exhibit zero resistivity or to demonstrate levitation (Early) are not difficult to synthesize. We believe that this is at least partially responsible for the explosive worldwide growth in these materials.

Poole further states at page 61:

[i]n this section three methods of preparation will be described, namely, the solid state, the coprecipitation, and the sol-gel techniques (Hatfi). The widely used solid-state technique permits off-the-shelf chemicals to be directly calcined into superconductors, and it requires little familiarity with the subtle physicochemical process involved in the transformation of a mixture of compounds into a superconductor.

Since skilled artisans can fabricate samples without knowing the chemistry and without a detailed theory thus this art is predictable. All that is needed is routine experimentation to fabricate samples. There is no evidence to the contrary. The Examiner has cited no evidence to the contrary and has presented no argument to the contrary. **This is the Poole 1988 Enablement Statement.**

POOLE 1995 ENABLEMENT STATEMENT

Charles Poole et al. published another book in 1995 entitled "Superconductivity" Academic Press which has a Chapter 7 on "Perovskite and Cuprate Crystallographic Structures". (Brief Attachment Z). This book will be referred to as Poole 1995.

At page 179 of Poole 1995 states:

V. PEROVSKITE-TYPE SUPERCONDUCTING STRUCTURES

In their first report on high-temperature superconductors Bednorz and Muller (1986) referred to their samples as "metallic, oxygen-deficient ... perovskite-like mixed-valence copper compounds." Subsequent work has confirmed that the new superconductors do indeed possess these characteristics.

Thus Poole 1988 states that the high T_c superconducting materials "are not difficult to synthesize" and Poole 1995 states that "the new superconductors do indeed possess [the] characteristics" that Applicants' specification describes these new superconductors to have.

This is the Poole 1995 Enablement Statement.

POOLE 1996 ENABLEMENT STATEMENT

Paragraph 48 of each DST AFFIDAVIT (Brief Attachments AM, AN and AO) note that the book "The New Superconductors", by Frank J. Owens and Charles P. Poole, Plenum Press, 1996, referred to herein as Poole 1996 in Chapter 8 entitled "New High Temperature Superconductors" starting a page 97 (See Brief Attachment AG) shows in Section 8.3 starting at page 98 entitled "Layered Structure of the Cuprates" schematic diagrams of the layered structure of the cuprate superconductors. Poole 1996 states in the first sentence of Section 8.3 at page 98 "All cuprate superconductors have the layered structure shown in Fig. 8.1." This is consistent with the teaching of Bednorz and Mueller that "These compositions have a layer-type Crystalline Structure often Perovskite-like" as noted in paragraph 14 of each of the DST AFFIDAVITS (above). Poole 1996 further states in the first sentence of Section 8.3 at page 98 "The flow of

supercurrent takes place in conduction layers and bonding layers support and hold together the conduction layers". The caption of Fig. 8.1 states "Layering scheme of the cuprate superconductors". Fig. 8.3 shows details of the conduction layers for difference sequence of copper oxide planes and Fig. 8.4 presents details of the bonding layers for several of the cuprates which include binding layers for lanthanum superconductor La_2CuO_4 , neodymium superconductor Nd_2CuO_4 , yttrium superconductor $\text{YBa}_2\text{Cu}_3\text{O}_{2n+4}$, bismuth superconductor $\text{Bi}_2\text{Sr}_2\text{Can-1 Cu}_n\text{O}_{2n+4}$, thallium superconductor $\text{Tl}_2\text{Ba}_2\text{Can-1 Cu}_n\text{O}_{2n+4}$, and mercury superconductor $\text{HgBa}_2\text{Can-1 Cu}_n\text{O}_{2n+2}$. Fig. 8.5 at pages 102 and 103 show a schematic atomic structure showing the layering scheme for thallium superconductors. Fig. 8.10 at page 109 shows a schematic crystal structure showing the layering scheme for La_2CuO_4 . Fig. 8.11 at page 110 shows a schematic crystal structure showing the layering scheme for $\text{HgBa}_2\text{Ca}_2\text{Cu}_3\text{O}_{8+x}$. Paragraph 48 of each DST AFFIDAVIT states that "[t]he layering shown in Poole 1996 for high T_c superconductors is consistent with the layering as taught by Bednorz and Mueller in their patent application." **This is the Poole 1996 Enablement Statement.**

SCHULLER ENABLEMENT STATEMENT

Page 4 of the Final Rejection which cites Schuller et al "A Snapshot View of High Temperature Superconductivity 2002" (report from workshop on High Temperature Superconductivity held April 5-8, 2002 in San Diego) which the Examiner states "discusses both the practical applications and theoretical mechanisms relating to superconductivity."

"empirical searches in the oxides gave rise to many superconducting systems"

Schuller is acknowledging that experimental researchers using intuition and systematic searches found the other known high T_c superconductors. Systematic searching is applying what is known to the experimental solid state scientist, that is, knowledge of how to fabricate compounds of the same class as

the compounds in which Bednorz and Muller first discovered High Tc superconductivity.

“empirical searches in the oxides gave rise to many superconducting systems”

Schuller states "Of course, 'enlightened' empirical searches either guided by chemical and materials intuition or systematic searches using well-defined strategies may prove to be fruitful. It is interesting to note that while empirical searches in the oxides gave rise to many superconducting systems, similar (probable?) searches after the discovery of superconductivity in MgB₂ have not uncovered any new superconductors." Schuller is acknowledging that experimental researchers using intuition and systematic searches found the other known high Tc superconductors. Systematic searching is applying what is known to the experimental solid state scientist, that is, knowledge of how to fabricate compounds of the same class as the compounds in which Bednorz and Muller first discovered High Tc superconductivity. **This is the Schuller Enablement Statement.**

RAO ENABLEMENT STATEMENT

The article of Rao et al. (Brief Attachment AB) states at page1, first paragraph of left column:

Several methods of synthesis have been employed for preparing cuprates, with the objective of obtaining pure monophasic products with good superconducting characteristics [3, 4]. The most common method of synthesis of cuprate superconductors is the traditional ceramic method which has been employed for the preparation of a large variety of oxide materials [5]. Although the ceramic method has yielded many of the cuprates with satisfactory characteristics, different synthetic strategies have become necessary in order to control factors such as the cation composition, oxygen stoichiometry, cation oxidation states and carrier concentration. Specifically noteworthy amongst these methods are chemical or solution routes which permit better mixing of the constituent cations

in order to reduce the diffusion distance in the solid state [5, 6]. Such methods include coprecipitation, use of precursors, the sol-gel method and the use of alkali fluxes. The combustion method or self-propagating high-temperature synthesis (SHS) has also been employed.

Reference 5 of the Rao et al., article is another example of a reference to the general principles of ceramic science incorporated into Applicants' teaching. The Rao et al. article states that the 29 materials reported on in the article and listed in Table 1 thereof are fabricated using the general principles of ceramic science. Moreover, the Rao article states that these materials are fabricated by what the Rao article calls the "ceramic method" which is the preferred embodiment in Applicants' specification, yet 12 of the 29 materials in Table 1 do not come within the scope of the claims allowed by the Examiner. Thus known examples fabricated according to Applicants' teaching will not literally come within the scope of the claims so far allowed to Applicants. All 29 materials of Table 1 are fabricated through experimentation, i.e., without undue experimentation as shown in the affidavits in Brief Attachments AH, AI, AJ, AK, AL, AM, AN and AO and Poole 1988 (Brief Attachments AF and AW) Poole 1995 (Brief Attachment W) Poole 1996 (Brief Attachment AG) and the Rao article (Brief Attachment AB). **This is the Rao Enablement Statement.**

PRELIMINARY COMMENTS C

The recited language of the following claims: 1, 12, 24, 27, 34, 36, 40, 42, 46, 55, 57, 58, 59, 64, 69, 77, 84, 86, 71, 93, 96, 103, 109, 123, 130, 135, 137, 139, 140, 361, 373, 374, 379, 383, 386, 438, 496, 497, 535, 543; includes the modifications made in the Thirteenth Supplemental Response submitted 11/25/2006 (unentered at the time of submission of this Brief) to use the terms "current source" and "temperature controller" used in allowed claims. Summary of the following claims: 218, 222, 229, 309, 313, 320, 466, 476, 517, 522, 467, 477, 5128 and 523 include the correction of the typographical errors made in the

Thirteenth Supplemental Response submitted 11/25/2006 (unentered at the time of submission of this Brief).

**ARGUMENTS FOR THE PATENTABILITY OF
EACH CLAIM INDIVIDUALLY
CLAIM 1**

Claim 1 recites:

CLAIM 1 A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or rare earth-like element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a temperature controller for maintaining said composition at said temperature to exhibit said superconductivity and a current source for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombee, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 2

Claim 2 recites:

CLAIM 2 The superconducting apparatus of claim 1, further including an alkaline earth element substituted for at least one atom of said rare earth or rare earth-like element in said composition.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 3

Claim 3 recites:

CLAIM 3 The superconducting apparatus of claim 2, where
said transition metal is Cu.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 4

Claim 4 recites:

CLAIM 4 The superconducting apparatus of claim 3, where said alkaline earth element is selected from the group consisting of B, Ca, Ba, and Sr.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 5

Claim 5 recites:

CLAIM 5 The superconducting apparatus of claim 1, where said transition metal element is selected from the group consisting of Cu, Ni, and Cr.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 6

Claim 6 recites:

CLAIM 6 The superconducting apparatus of claim 2, where said rare earth or rare earth-like element is selected from the group consisting of La, Nd, and Ce.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 7

Claim 7 recites:

CLAIM 7 The superconducting apparatus of claim 1, where said phase is crystalline with a perovskite-like structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 8

Claim 8 recites:

CLAIM 8 The superconducting apparatus of claim 2, where said phase is crystalline with a perovskite-like structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 9

Claim 9 recites:

CLAIM 9 The superconducting apparatus of claim 1, where said phase exhibits a layer-like crystalline structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 10

Claim 10 recites:

CLAIM 10 The superconducting apparatus of claim 1, where said phase is a mixed copper oxide phase.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 11

Claim 11 recites:

CLAIM 11 The superconducting apparatus of claim 1, where said composition is comprised of mixed oxides with alkaline earth doping.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 12

Claim 12 recites:

CLAIM 12 A superconducting combination, comprising a superconductive oxide having a transition temperature greater than or equal to 26°K,

A current source for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said transition temperature, and

a temperature controller for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

Applicant notes that the Schuller Enablement Statement specifically states that systematic study in the oxides give rise to many high Tc systems. A systematic study is what a person of ordinary skill in the art knows how to do.

CLAIM 13

Claim 13 recites:

CLAIM 13 The combination of claim 12, where said superconductive composition includes a transition metal oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 14

Claim 14 recites:

CLAIM 14 The combination of claim 12, where said superconductive composition includes Cu-oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 15

Claim 15 recites:

CLAIM 15 The combination of claim 12, where said superconductive composition includes a multivalent transition metal, oxygen, and at least one additional element.

CLAIM 16 The combination of claim 15, where said transition metal is Cu.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 16

Claim 16 recites:

CLAIM 16 The combination of claim 15, where said transition metal is Cu.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 17

Claim 17 recites:

CLAIM 17 The combination of claim 15, where said additional element is a rare earth or rare earth-like element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 18

Claim 18 recites:

CLAIM 18 The combination of claim 15, where said additional element is an alkaline earth element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 19

Claim 19 recites:

CLAIM 19 The combination of claim 12, where said composition includes a perovskite-like superconducting phase.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 20

Claim 20 recites:

CLAIM 20 The combination of claim 12, where said composition includes a substituted transition metal oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 21

Claim 21 recites:

CLAIM 21 The combination of claim 20, where said substituted transition metal oxide includes a multivalent transition metal element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 22

Claim 22 recites:

CLAIM 22 The combination of claim 20, where said substituted transition metal oxide is an oxide of copper.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 23

Claim 23 recites:

CLAIM 23 The combination of claim 20, where said
substituted transition metal oxide has a layer-like structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 24

Claim 24 recites:

CLAIM 24 An apparatus comprising:

a transition metal oxide having a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to of 26°K,

a temperature controller for lowering the temperature of said material at least to said critical temperature to produce said superconducting state in said phase, and

a current source for passing an electrical superconducting current through said transition metal oxide while it is in said superconducting state.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by

Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 25

Claim 25 recites:

CLAIM 25 The apparatus of claim 24, where said transition metal oxide is comprised of a transition metal capable of exhibiting multivalent states.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 26

Claim 26 recites:

CLAIM 26 The apparatus of claim 24, where said transition metal oxide is comprised of a Cu oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 27

Claim 27 recites:

CLAIM 27 A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, said composition being a substituted Cu-oxide including a superconducting phase having a structure which is structurally substantially similar to the orthorhombic-tetragonal phase of said composition, a temperature controller for maintaining said composition at a temperature greater than or equal to said transition temperature to put said composition in a superconducting state; and a current source for passing current through said composition while in said superconducting state.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 28

Claim 28 recites:

CLAIM 28 The superconducting apparatus of claim 27,
where said substituted Cu-oxide includes a rare earth or rare
earth-like element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 29

Claim 29 recites:

CLAIM 29 The superconducting apparatus of claim 27,
where said substituted Cu-oxide includes an alkaline earth
element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 30

Claim 30 recites:

CLAIM 30 The superconducting apparatus of claim 29,
where said alkaline earth element is atomically large with
respect to Cu.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 31

Claim 31 recites:

CLAIM 31 The superconducting apparatus of claim 27, where said composition has a crystalline structure which enhances electron-phonon interactions to produce superconductivity at a temperature greater than or equal to 26°K.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 32

Claim 32 recites:

CLAIM 32 The superconducting apparatus of claim 31,
where said crystalline structure is layer-like, enhancing the
number of Jahn-Teller polarons in said composition.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 33

Claim 33 recites:

CLAIM 33 A superconducting apparatus comprising a composition having a superconducting onset temperature greater than or equal to 26°K, the composition being comprised of a copper oxide doped with an alkaline earth element where the concentration of said alkaline earth element is near to the concentration of said alkaline earth element where the superconducting copper oxide phase in said composition undergoes an orthorhombic to tetragonal structural phase transition.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 34

Claim 34 recites:

CLAIM 34 A superconducting apparatus having a superconducting onset temperature greater than or equal to 26°K, the composition being comprised of a mixed copper oxide doped with an element chosen to result in Cu³⁺ ions in said composition and a current source for passing a superconducting current through said superconducting composition.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 35

Claim 35 recites:

CLAIM 35 The superconducting apparatus of claim 34,
where said doping element includes an alkaline earth
element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 36

Claim 36 recites:

CLAIM 36 A combination comprising:

a composition having a superconducting onset temperature greater than or equal to 26°K, said composition being comprised of a substituted copper oxide exhibiting mixed valence states and at least one other element in its crystalline structure,

a current source for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said superconducting onset temperature, and

a temperature controller for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei,

Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 37

Claim 37 recites:

CLAIM 37 The combination of claim 36, where said at least one other element is an alkaline earth element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 38

Claim 38 recites:

CLAIM 38 The combination of claim 36, where said at least one other element is an element which results in Cu³⁺ ions in said composition.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 39

Claim 39 recites:

CLAIM 39 The combination of claim 36, where said at least one other element is an element chosen to result in the presence of both Cu²⁺ and Cu³⁺ ions in said composition.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 40

Claim 40 recites:

CLAIM 40 An apparatus comprising a superconductor exhibiting a superconducting onset at an onset temperature greater than or equal to 26°K, said superconductor being comprised of at least four elements, none of which is itself superconducting at a temperature greater than or equal to 26°K, a temperature controller for maintaining said superconductor at an operating temperature in excess of said onset temperature to maintain said superconductor in a superconducting state and a current source for passing current through said superconductor while in said superconducting state.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 41

Claim 41 recites:

CLAIM 41 The apparatus of claim 40, where said elements include a transition metal and oxygen.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 42

Claim 42 recites:

CLAIM 42 A apparatus having a superconducting onset temperature greater than or equal to 26°K, said superconductor being a doped transition metal oxide, where said transition metal is itself non-superconducting and a current source for passing a superconducting electric current through said composition.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 43

Claim 43 recites:

CLAIM 43 The apparatus of claim 42, where said doped transition metal oxide is multivalent in said superconductor.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 44

Claim 44 recites:

CLAIM 44 The apparatus of claim 42, further including an element which creates a mixed valent state of said transition metal.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 45

Claim 45 recites:

CLAIM 45 The apparatus of claim 43, where said transition metal is Cu.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 46

Claim 46 recites:

CLAIM 46 An apparatus having a superconductor having a superconducting onset temperature greater than or equal to 26°K, said superconductor being an oxide having multivalent oxidation states and including a metal, said oxide having a crystalline structure which is oxygen deficient and a current source for passing a superconducting electric current through said superconductor.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 47

Claim 47 recites:

CLAIM 47 The apparatus of claim 46, where said transition metal is Cu.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 48

Claim 48 recites:

CLAIM 48 A superconductive apparatus comprising a superconductive composition comprised of a transition metal oxide having substitutions therein, the amount of said substitutions being sufficient to produce sufficient electron-phonon interactions in said composition that said composition exhibits a superconducting onset at temperatures greater than or equal to 26°K, and a source of current for passing a superconducting electric current through said superconductor.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 49

Claim 49 recites:

CLAIM 49 The superconductive apparatus of claim 48,
where said transition metal oxide is multivalent in said
composition.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 50

Claim 50 recites:

CLAIM 50 The superconductive apparatus of claim 48,
where said transition metal is Cu.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 51

Claim 51 recites:

CLAIM 51 The superconductive apparatus of claim 48, where said substitutions include an alkaline earth element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 52

Claim 52 recites:

CLAIM 52 The superconductive apparatus of claim 48,
where said substitutions include a rare earth or rare earth-
like element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 53

Claim 53 recites:

CLAIM 53 A superconductive apparatus comprised of a copper oxide having a layer-like crystalline structure and at least one additional element substituted in said crystalline structure, said structure being oxygen deficient and exhibiting a superconducting onset temperature greater than or equal to 26°K.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 54

Claim 54 recites:

CLAIM 54 The superconductor of claim 53, where said additional element creates a mixed valent state of said copper oxide in said superconductor.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 55

Claim 55 recites:

CLAIM 55 A combination, comprising:

a transition metal oxide having an superconducting onset temperature greater than about 26°K and having an oxygen deficiency, said transition metal being non-superconducting at said superconducting onset temperature and said oxide having multivalent states,

a current source for passing an electrical superconducting current through said oxide while said oxide is at a temperature greater than or equal to 26°K, and

temperature controller for cooling said oxide in a superconducting state at a temperature greater than or equal to 26°K.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In

particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 56

CLAIM recites:

CLAIM 56 The combination of claim 55, where said transition metal is Cu.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 57

Claim 57 recites:

CLAIM 57 A combination including;

a superconducting oxide having a superconducting onset temperature greater than or equal to 26°K and containing at least 3 elements which are non-superconducting at said onset temperature,

a current source for passing a superconducting current through said oxide while said oxide is maintained at a temperature greater than or equal to 26°K, and

temperature controller for maintaining said oxide in a superconducting state at a temperature greater than or equal to 26°K and less than said superconductive onset temperature.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In

particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 58

Claim 58 recites:

CLAIM 58 A combination, comprised of:

a copper oxide superconductor having a superconductor onset temperature greater than about 26°K including an element which results in a mixed valent state in said oxide, said oxide being crystalline and having a layer-like structure,

a current source for passing a superconducting current through said copper oxide while it is maintained at a temperature greater than or equal to 26°K and less than said superconducting onset temperature, and

temperature controller for cooling said copper oxide to a superconductive state at a temperature greater than or equal to 26°K and less than said superconducting onset temperature.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei,

Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 59

Claim 59 recites:

CLAIM 59 A combination, comprised of:

a ceramic-like material having an onset of superconductivity at an onset temperature greater than or equal to 26°K,

a current source for passing a superconducting electrical current through said ceramic-like material while said material is maintained at a temperature greater than or equal to 26°K and less than said onset temperature, and

temperature controller for cooling said superconducting ceramic-like material to a superconductive state at a temperature greater than or equal to 26°K and less than said onset temperature, said material being superconductive at temperatures below said onset temperature and a ceramic at temperatures above said onset temperature.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei,

Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 60

Claim 60 recites:

CLAIM 60 An apparatus comprised of a transition metal oxide, and at least one additional element, said superconductor having a distorted crystalline structure characterized by an oxygen deficiency and exhibiting a superconducting onset temperature greater than or equal to of 26°K, a source of current for passing a superconducting electric current in said transition metal oxide, and a cooling apparatus for maintaining said transition metal oxide below said onset temperature at a temperature greater than or equal to 26°K.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 61

Claim 61 recites:

CLAIM 61 The apparatus of claim 60, where said transition metal is Cu.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 62

Claim 62 recites:

CLAIM 62 An apparatus comprised of a transition metal oxide and at least one additional element, said superconductor having a distorted crystalline structure characterized by an oxygen excess and exhibiting a superconducting onset temperature greater than or equal to 26°K, a source of current for passing a superconducting electric current in said transition metal oxide, and a cooling apparatus for maintaining said transition metal oxide below said onset temperature and at a temperature greater than or equal to of 26°K.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 63

Claim 63 recites:

CLAIM 63 The apparatus of claim 62, where said transition metal is Cu.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 64

Claim 64 recites:

CLAIM 64 A combination, comprising:

a mixed copper oxide composition having enhanced polaron formation, said composition including an element causing said copper to have a mixed valent state in said composition, said composition further having a distorted octahedral oxygen environment leading to a T_c greater than or equal to 26°K,

a current source for providing a superconducting current through said composition at temperatures greater than or equal to 26°K and less than said T_c , and

temperature controller for cooling said composition to a temperature greater than or equal to 26°K and less than said T_c .

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei,

Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 65

Claim 65 which is allowed recites:

CLAIM 65 An apparatus comprising a composition exhibiting superconductivity at temperatures greater than or equal to 26°K, said composition being a ceramic-like material in the RE-AE-TM-O system, where RE is a rare earth or near rare earth element, AE is an alkaline earth element, TM is a multivalent transition metal element having at least two valence states in said composition, and O is oxygen, the ratio of the amounts of said transition metal in said two valence states being determined by the ratio RE : AE, a source of current for passing a superconducting electric current in said transition metal oxide, and a cooling apparatus for maintaining said transition metal oxide below said onset temperature and at a temperature greater than or equal to 26°K.

CLAIM 66

Claim 66 recites:

CLAIM 66 An apparatus comprising a superconductive composition having a transition temperature greater than or equal to 26°K, the composition including a multivalent transition metal oxide and at least one additional element, said composition having a distorted orthorhombic crystalline structure, a source of current for passing a superconducting electric current in said transition metal oxide, and a cooling apparatus for maintaining said transition metal oxide below said onset temperature and at a temperature greater than or equal to 26°K.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 67

Claim 67 recites:

CLAIM 67 The apparatus of claim 66, where said transition metal oxide is a mixed copper oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 68

Claim 68 recites:

CLAIM 68 The apparatus of claim 67, where said one additional element is an alkaline earth element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 69

Claim 69 recites:

CLAIM 69 A superconductive combination, comprising:

a superconducting composition exhibiting a superconducting transition temperature greater than or equal to 26°K, said composition being a transition metal oxide having a distorted orthorhombic crystalline structure, and

a current source for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said superconducting transition temperature.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 70

Claim 70 recites:

CLAIM 70 The combination of claim 69, where said transition metal oxide is a mixed copper oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 71

Claim 71 recites:

CLAIM 71 The combination of claim 70, where said mixed copper oxide includes an alkaline earth element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 72

Claim 72 recites:

CLAIM 72 The combination of claim 71, where said mixed copper oxide further includes a rare earth or rare earth-like element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 73

Claim 73 which is withdrawn recites:

CLAIM 73 An apparatus comprising a composition of matter comprising a superconducting onset temperature greater than or equal to 26°K, said composition of matter made by a method comprising the steps of:

preparing powders of oxygen-containing compounds of a rare earth or rare earth-like element, an alkaline earth element, and copper,

mixing said compounds and firing said mixture to create a mixed copper oxide composition including said alkaline earth element and said rare earth or rare earth-like element, and

annealing said mixed copper oxide composition at an elevated temperature less than about 950°C in an atmosphere including oxygen to produce a superconducting composition having a mixed copper oxide phase exhibiting a superconducting onset temperature greater than or equal to 26°K, said superconducting composition having a layer-like crystalline structure after said annealing step.

CLAIM 74

CLAIM 74 is withdrawn

CLAIM 75

Claim 75 is withdrawn

CLAIM 76

CLAIM 76 is withdrawn

CLAIM 77

Claim 77 which is allowed recites:

CLAIM 77 A combination, comprising:

a mixed copper oxide composition including an alkaline earth element (AE) and a rare earth or rare earth-like element (RE), said composition having a layer-like crystalline structure and multi-valent oxidation states, said composition exhibiting a substantially zero resistance to the flow of electrical current therethrough when cooled to a superconducting state at a temperature greater than or equal to 26°K, said mixed copper oxide having a superconducting onset temperature greater than or equal to 26°K, and

electrical means for passing an electrical superconducting current through said composition when said composition exhibits substantially zero resistance at a temperature greater than or equal to 26°K and less than said onset temperature.

CLAIM 78

CLAIM 78 which is allowed recites:

CLAIM 78 The combination of claim 77, where the ratio (AE,RE) : Cu is substantially 1:1.

CLAIM 79

Claim 79 which is allowed recites:

CLAIM 79 The combination of claim 77, where the ratio (AE,RE) : Cu is substantially 1:1.

CLAIM 80

Claim 80 which is allowed recites:

CLAIM 80 The combination of claim 77, wherein said crystalline structure is perovskite-like.

CLAIM 81

CLAIM 81 which is allowed recites:

CLAIM 81 The combination of claim 77, where said mixed copper oxide composition has a non-stoichiometric amount of oxygen therein.

CLAIM 82

CLAIM 82 is withdrawn

CLAIM 83

CLAIM 83 is withdrawn

CLAIM 84

Claim 84 recites:

CLAIM 84 A superconducting combination, comprising:

a mixed transition metal oxide composition containing a non-stoichiometric amount of oxygen therein, a transition metal and at least one additional element, said composition having substantially zero resistance to the flow of electricity therethrough when cooled to a superconducting state at a temperature greater than or equal to 26°K, said mixed transition metal oxide has a superconducting onset temperature greater than or equal to 26°K, and

a current source for passing an electrical superconducting current through said composition when said composition is in said superconducting state at a temperature greater than or equal to 26°K, and less than said superconducting onset temperature.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei,

Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 85

Claim 85 recites:

CLAIM 85 The combination of claim 84, where said transition metal is copper.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 86

CLAIM 86 which is allowed recites:

CLAIM 86 An apparatus comprising:

a composition including a transition metal, a rare earth or rare earth-like element, an alkaline earth element, and oxygen, where said composition is a mixed transition metal oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting onset temperature greater than or equal to 26°K,

a temperature controller for maintaining said composition to said superconducting state at a temperature greater than or equal to 26°K and less than said superconducting onset temperature, and

a current source for passing an electrical current through said composition while said composition is in said superconducting state.

CLAIM 87

Claim 87 which is allowed recites:

CLAIM 87 The apparatus of claim 86, where said transition metal is copper.

CLAIM 88

Claim 88 recites:

CLAIM 88 An apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K,

a cooler for cooling said composition to a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state, and

a current source for passing an electrical current through said composition while said composition is in said superconductive state.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 89

Claim 89 recites:

CLAIM 89 The apparatus of claim 88, where said composition is comprised of a metal oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 90

Claim 90 recites:

CLAIM 90 The apparatus of claim 88, where said composition is comprised of a transition metal oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 91

Claim 91 recites:

CLAIM 91 A combination, comprising:

a composition exhibiting the onset of a DC substantially zero resistance state at an onset temperature in excess of 30°K,
and

a current source for passing an electrical current through said composition while it is in said substantially zero resistance state.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 92

Claim 92 recites:

CLAIM 92 The combination of claim 91, where said composition is a copper oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 93

CLAIM 93 recites:

CLAIM 93 An apparatus, comprising:

a mixed copper oxide material exhibiting an onset of superconductivity at an onset temperature greater than or equal to 26°K, and

a current source for producing an electrical current through said copper oxide material while it is in a superconducting state at a temperature greater than or equal to 26°K.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 94

Claim 94 recites:

CLAIM 94 The apparatus of claim 93, where said copper oxide material exhibits a layer-like crystalline structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 95

Claim 95 recites:

CLAIM 95 The apparatus of claim 93, where said copper oxide material exhibits a mixed valence state.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 96

Claim 96 recites:

CLAIM 96 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition comprising a copper-oxide compound having a layer-type perovskite-like crystal structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a current source for causing an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the

Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 97

Claim 97 which is allowed recites:

CLAIM 97 The superconductive apparatus according to claim 96 in which the copper-oxide compound of the superconductive composition includes at least one rare-earth or rare-earth-like element and at least one alkaline-earth element.

CLAIM 98

Claim 98 which is allowed recites:

CLAIM 98 The superconductive apparatus according to claim 97 in which the rare-earth or rare-earth-like element is lanthanum.

CLAIM 99

Claim 99 which is allowed recites:

CLAIM 99 The superconductive apparatus according to claim 97 in which the alkaline-earth element is barium.

CLAIM 100

Claim 100 recites:

CLAIM 100 The superconductive apparatus according to claim 96 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 101

Claim 101 recites:

CLAIM 101 The superconductive apparatus according to claim 100 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 102

Claim 102 recites:

CLAIM 102 The superconductive apparatus according to claim 101 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 103

Claim 103 which is allowed recites:

CLAIM 103 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a layer-type perovskite-like crystal structure, the copper-oxide compound including at least one rare-earth or rare-earth-like element and at least one alkaline-earth element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{q=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{q=0}$ of the superconductive composition; and
- (c) a current source for causing an electric current to flow in the superconductor element.

CLAIM 104

Claim 104 which is allowed recites:

CLAIM 104 The superconductive apparatus according to claim 103 in which the rare-earth or rare-earth-like element is lanthanum.

CLAIM 105

Claim 105 which is allowed recites:

CLAIM 105 The superconductive apparatus according to claim 103 in which the alkaline-earth element is barium.

CLAIM 106

Claim 106 which is allowed recites:

CLAIM 106 The superconductive apparatus according to claim 103 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

CLAIM 107

Claim 107 which is allowed recites:

CLAIM 107 The superconductive apparatus according to claim 106 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

CLAIM 108

Claim 108 which is allowed recites:

CLAIM 108 The superconductive apparatus according to claim 107 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

CLAIM 109

Claim 109 recites:

CLAIM 109 A superconductive apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or alkaline earth element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a temperature controller for maintaining said composition at said temperature to exhibit said superconductivity and a current source for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 110

Claim 110 recites:

CLAIM 110 The combination of claim 15, where said additional element is rare earth or alkaline earth element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 111

Claim 111 recites:

CLAIM 111 A device comprising a superconducting transition metal oxide having a superconductive onset temperature greater than or equal to 26°K, said superconducting transition metal oxide being at a temperature less than said superconducting onset temperature and having a superconducting current flowing therein.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 112

Claim 112 recites:

CLAIM 112 A device comprising a superconducting copper oxide having a superconductive onset temperature greater than or equal to 26°K, said superconducting copper oxide being at a temperature less than said superconducting onset temperature and having a superconducting current flowing therein.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 113

Claim 113 which is allowed recites:

CLAIM 113 A device comprising a superconducting oxide composition having a superconductive onset temperature greater than or equal to 26°K, said superconducting copper oxide being at a temperature less than said superconducting onset temperature and having a superconducting current flowing therein, said composition comprising at least one each of rare earth, an alkaline earth, and copper.

CLAIM 114

Claim 114 which is allowed recites:

CLAIM 114 A device comprising a superconducting oxide composition having a superconductive onset temperature greater than or equal to 26°K, said superconducting copper oxide being at a temperature less than said superconducting onset temperature and having a superconducting current flowing therein, said composition comprising at least one each of a group IIIB element, an alkaline earth, and copper.

CLAIM 115

Claim 115 recites:

CLAIM 115 A device comprising a transition metal oxide having a T_c greater than or equal to 26°K carrying a superconducting current said transition metal oxide is maintained at a temperature less than said T_c .

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 116

Claim 116 recites:

CLAIM 116 An apparatus comprising a transition metal oxide having a Tc greater than or equal to 26°K carrying a superconducting current said transition metal oxide is maintained at a temperature less than said Tc.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 117

Claim 117 recites:

CLAIM 117 A structure comprising a transition metal oxide having a Tc greater than or equal to 26°K carrying a superconducting current.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 118

Claim 118 recites:

CLAIM 118 An apparatus comprising a transition metal oxide having a Tc greater than or equal to 26°K carrying a superconducting current.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 119

Claim 119 recites:

CLAIM 119 A device comprising a copper oxide having a Tc greater than or equal to 26°K carrying a superconducting current said copper oxide is maintained at a temperature less than said Tc.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 120

Claim 120 recites:

CLAIM 120 An apparatus comprising a copper oxide having a Tc greater than or equal to 26°K carrying a superconducting current said copper oxide is maintained at a temperature less than said Tc.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 121

Claim 121 recites:

CLAIM 121 A device comprising a copper oxide having a T_c greater than or equal to 26°K carrying a superconducting current.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 122

Claim 122 recites:

CLAIM 122 An apparatus comprising a copper oxide having a Tc greater than or equal to 26°K carrying a superconducting current.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 123

Claim 123 which is allowed recites:

CLAIM 123 A superconductive apparatus comprising:

a composition of the formula $B_xLax-5Cu_5OY$ wherein x is from about 0.75 to about 1 and y is the oxygen deficiency resulting from annealing said composition at temperatures from about 540°C to about 950°C and for times of about 15 minutes to about 12 hours, said composition having a metal oxide phase which exhibits a superconducting state at a critical temperature greater than or equal to 26°K;

a temperature controller for maintaining the temperature of said composition at a temperature less than said critical temperature to induce said superconducting state in said metal oxide phase; and

a current source for passing an electrical current through said composition while said metal oxide phase is in said superconducting state.

CLAIM 124

Claim 124 which is allowed recites:

CLAIM 124 A device comprising a composition of matter having a T_c greater than or equal to 26°K carrying a superconducting current, said composition comprising at

least one each of a IIIB element, an alkaline earth, and copper oxide said device is maintained at a temperature less than said T_c .

CLAIM 125

Claim 125 which is allowed recites:

CLAIM 125 An apparatus comprising a composition of matter having a T_c greater than or equal to 26°K carrying a superconducting current, said composition comprising at least one each of a rare earth, an alkaline earth, and copper oxide.

CLAIM 126

Claim 126 recites:

CLAIM 126 A device comprising a composition of matter having a T_c greater than or equal to 26°K carrying a superconducting current, said composition comprising at least one each of a rare earth, and copper oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 127

Claim 127 recites:

CLAIM 127 A device comprising a composition of matter having a T_c greater than or equal to 26°K carrying a superconducting current, said composition comprising at least one each of a IIIB element, and copper oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 128

Claim 128 recites:

CLAIM 128 A transition metal oxide device comprising a T_c greater than or equal to 26°K and carrying a superconducting current.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 129

Claim 129 recites:

CLAIM 129 A copper oxide device comprising a TC greater than or equal to 26°K and carrying a superconducting current.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 130

Claim 130 recites:

CLAIM 130 A superconductive apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or Group III B element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a temperature controller for maintaining said composition at said temperature to exhibit said superconductivity and a current source for passing an electrical superconducting current through said composition which exhibiting said superconductivity.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 131

Claim 131 recites:

CLAIM 131 The combination of claim 15, where said additional element is a rare earth or Group III B element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 132

Claim 132 recites:

CLAIM 132 The combination of claim 12, where said composition includes a substantially perovskite superconducting phase.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 134

Claim 134 recites:

CLAIM 133 The superconducting apparatus of claim 27,
where said substituted Cu-oxide includes a rare earth or
Group III B element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 134

Claim 134 recites:

CLAIM 134 The combination of claim 71, where said mixed copper oxide further includes a rare earth or Group III B element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 135

Claim 135 which is allowed recites:

CLAIM 135 A combination, comprising:

a mixed copper oxide composition including an alkaline earth element (AE) and a rare earth or Group III B element (RE), said composition having a substantially layered crystalline structure and multi-valent oxidation states, said composition exhibiting a substantially zero resistance to the flow of electrical current therethrough when in a superconducting state at a temperature greater than or equal to 26°K, said mixed copper oxide having a superconducting onset temperature greater than or equal to 26°K and,

a current source for passing an electrical superconducting current through said composition when said composition exhibits substantially zero resistance at a temperature greater than or equal to 26°K and less than said onset temperature.

CLAIM 136

Claim 136 which is allowed recites:

CLAIM 136 The combination of claim 77, where said crystalline structure is substantially perovskite.

CLAIM 137

Claim 137 which is allowed recites:

CLAIM 137 An apparatus comprising:

a composition including a transition metal, a rare earth or Group III B element, an alkaline earth element, and oxygen, where said composition is a mixed transition metal oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K,

a temperature controller for maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K, and less than said superconducting onset temperature, and

a current source for passing an electrical current through said composition while said composition is in said superconducting state.

CLAIM 138

Claim 138 which is allowed recites:

CLAIM 138 The apparatus of claim 93, where said copper oxide material exhibits a substantially layered crystalline structure.

CLAIM 139

Claim 139 recites:

CLAIM 139 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a current source for causing an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement

Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 140

Claim 140 which is allowed recites:

CLAIM 140 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the copper-oxide compound including at least one rare-earth or Group III B element and at least one alkaline-earth element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{r=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{r=0}$ of the superconductive composition; and
- (c) a current source for causing an electric current to flow in the superconductor element.

CLAIM 141

Claim 141 recites:

CLAIM 141 An apparatus comprising a transition metal oxide having a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to 26°K,

a temperature controller maintaining the temperature of said material at a temperature less than said critical temperature to produce said superconducting state in said phase, and

a current source passing an electrical supercurrent through said transition metal oxide while it is in said superconducting state.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 142

Claim 142 recites:

CLAIM 142 The apparatus of claim 141, where said transition metal oxide is comprised of a transition metal capable of exhibiting multivalent states.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 143

Claim 143 recites:

CLAIM 143 The apparatus of claim 141, where said transition metal oxide is comprised of a Cu oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 144

Claim 144 which is allowed recites:

CLAIM 144 An apparatus comprising:

a composition including a transition metal, a rare earth or rare earth-like element, an alkaline earth element, and oxygen, where said composition is a mixed transition metal oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K,

a temperature controller maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K, and

a current source passing an electrical current through said composition while said composition is in said superconducting state.

CLAIM 145

Claim 145 which is allowed recites:

CLAIM 145 The apparatus of claim 144, where said transition metal is copper.

CLAIM 146

Claim 146 recites:

CLAIM 146 An apparatus:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K,

a temperature controller maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state, and

a current source passing an electrical current through said composition while said composition is in said superconductive state.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by

Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 147

Claim 147 recites:

CLAIM 147 The apparatus of claim 146, where said composition is comprised of a metal oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 148

Claim 148 recites:

CLAIM 148 The apparatus of claim 146, where said composition is comprised of a transition metal oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 149

Claim 149 recites:

CLAIM 149 A superconductive apparatus for causing electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a layer-type perovskite-like crystal structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) causing an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement

Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 150

Claim 150 which is allowed recites:

CLAIM 150 The superconductive apparatus according to claim 149 in which the copper-oxide compound of the superconductive composition includes at least one rare-earth or rare-earth-like element and at least one alkaline-earth element.

CLAIM 151

Claim 151 which is allowed recites:

CLAIM 151 The superconductive apparatus according to claim 150 in which the rare-earth or rare-earth-like element is lanthanum.

CLAIM 152

Claim 152 which is allowed recites:

CLAIM 152 The superconductive apparatus according to claim 150 in which the alkaline-earth element is barium.

CLAIM 153

Claim 153 recites:

CLAIM 153 The superconductive apparatus according to claim 149 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 154

Claim 154 recites:

CLAIM 154 The superconductive apparatus according to claim 153 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 155

Claim 155 recites:

CLAIM 155 The superconductive apparatus according to claim 154 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 156

Claim 156 which is allowed recites:

CLAIM 156 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a layer-type perovskite-like crystal structure, the copper-oxide compound including at least one rare-earth or rare-earth-like element and at least one alkaline-earth element, the composition having a superconductive/resistive-transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

CLAIM 157

Claim 157 which is allowed recites:

CLAIM 157 The superconductive apparatus according to claim 156 in which the rare-earth or rare-earth-like element is lanthanum.

CLAIM 158

Claim 158 which is allowed recites:

CLAIM 158 The superconductive apparatus according to claim 156 in which the alkaline-earth element is barium.

CLAIM 159

Claim 159 which is allowed recites:

CLAIM 159 The superconductive apparatus according to claim 156 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

CLAIM 160

Claim 160 which is allowed recites:

CLAIM 160 The superconductive apparatus according to claim 159 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

CLAIM 161

Claim 161 which is allowed recites:

CLAIM 161 The superconductive apparatus according to claim 160 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

CLAIM 162

Claim 162 recites:

CLAIM 162 An apparatus comprising copper oxide having a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to 26°K;

a temperature controller maintaining the temperature of said material at a temperature less than said critical temperature to produce said superconducting state in said phase;

a current source passing an electrical supercurrent through said copper oxide while it is in said superconducting state;

said copper oxide includes at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by

Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 163

Claim 163 recites:

CLAIM 163 An apparatus comprising:

a composition comprising copper, oxygen and any element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, where said composition is a mixed copper oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K;

a temperature controller maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K; and

a current source passing an electrical current through said composition while said composition is in said superconducting state.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the

Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 164

Claim 164 recites:

CLAIM 164 An apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K;

a temperature controller maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state;

a current source passing an electrical current through said composition while said composition is in said superconductive state; and

said composition including a copper oxide and an element selected from the group consisting of Group II A element, a rare earth element and a Group III B element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the

Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 165

Claim 165 recites:

CLAIM 165 An apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a layer-type perovskite-like crystal structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element, a rare earth element; and a Group III B element;
- (b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have

shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 166

Claim 166 recites:

CLAIM 166 An apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a layer-type perovskite-like crystal structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 167

Claim 167 which is allowed recites:

CLAIM 167 An apparatus comprising:

a copper oxide having a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to 26°K;

a temperature controller maintaining the temperature of said material at a temperature less than said critical temperature to produce said superconducting state in said phase;

a current source passing an electrical supercurrent through said copper oxide while it is in said superconducting state;

said copper oxide includes an element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element.

CLAIM 168

Claim 168 which is allowed recites:

CLAIM 168 An apparatus comprising:

a composition including copper, oxygen and an element selected from the group consisting of at least one Group II A

element and at least one element selected from the group consisting of a rare earth element and a Group III B element, where said composition is a mixed copper oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K;

a temperature controller maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K; and

a current source passing an electrical current through said composition while said composition is in said superconducting state.

CLAIM 169

Claim 169 which is allowed recites:

CLAIM 169 An apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K;

a temperature controller maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state;

a current source passing an electrical current through said composition while said composition is in said superconductive state; and

said composition including a copper oxide and at least one element selected from the group consisting of Group II A and at least one element selected from the group consisting of a rare earth element and a Group III B element.

CLAIM 170

Claim 170 which is allowed recites:

CLAIM 170 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a layer-type perovskite-like crystal structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and

below the superconductor transition temperature T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 171

Claim 171 which is allowed recites:

CLAIM 171 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a layer-type perovskite-like crystal structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive-resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 172

Claim 172 which is allowed recites:

CLAIM 172 An apparatus comprising:

a transition metal oxide having a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to 26°K;

a temperature controller maintaining the temperature of said material at a temperature less than said critical temperature to produce said superconducting state in said phase;

a current source passing an electrical supercurrent through said copper oxide while it is in said superconducting state;

said transitional metal oxide includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element.

CLAIM 173

Claim 173 which is allowed recites:

CLAIM 173 An apparatus comprising:

a composition including a transition metal, oxygen and an element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, where said composition is a mixed transitional metal oxide formed from said transition metal and said oxygen, said mixed transition metal oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K;

a temperature controller maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K; and

a current source passing an electrical current through said composition while said composition is in said superconducting state.

CLAIM 174

Claim 174 which is allowed recites:

CLAIM 174 An apparatus:

forming a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K;

a temperature controller maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state;

a current source passing an electrical current through said composition while said composition is in said superconductive state; and

said composition including a transitional metal oxide and at least one element selected from the group consisting of Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element.

CLAIM 175

Claim 175 which is allowed recites:

CLAIM 175 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal oxide compound having a layer-type perovskite-like crystal structure, the composition having a superconductive transition temperature T_c of

greater than or equal to 26°K, said superconductive composition includes an element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 176

Claim 176 which is allowed recites:

CLAIM 176 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal-oxide compound having a layer-type perovskite-like crystal structure, the transition metal-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the

composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 177

Claim 177 which is allowed recites:

CLAIM 177 An apparatus comprising:

a copper oxide having a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to 26°K;

a temperature controller maintaining the temperature of said material at a temperature less than said critical temperature to produce said superconducting state in said phase;

a current source passing an electrical supercurrent through said copper oxide while it is in said superconducting state;

said copper oxide includes at least one Group II A element, and at least one element selected from the group consisting of a rare earth element and a Group III B element.

CLAIM 178

Claim 178 which is allowed recites:

CLAIM 178 An apparatus comprising:

a composition including copper, oxygen, a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, where said composition is a mixed copper oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K;

a temperature controller maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K; and

a current source passing an electrical current through said composition while said composition is in said superconducting state.

CLAIM 179

CLAIM 179 which is allowed recites:

CLAIM 179 A structure comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K;

a temperature controller maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state;

a current source passing an electrical current through said composition while said composition is in said superconductive state; and

said composition including a copper oxide, a Group II A element, at least one element selected from the group consisting of a rare earth element and a Group III B element.

CLAIM 180

Claim 180 which is allowed recites:

CLAIM 180 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a layer-type perovskite-like crystal structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes a Group II A element, and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 181

Claim 181 which is allowed recites:

CLAIM 181 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a layer-type perovskite-like crystal structure, the copper-oxide compound

including Group II A element, and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition having a superconductive-resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 182

Claim 182 recites:

CLAIM 182 An apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or alkaline earth element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a temperature controller maintaining said composition at said temperature to exhibit said superconductivity and a current source passing an electrical superconducting current through said composition with said phrase exhibiting said superconductivity.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 183

Claim 183 recites:

CLAIM 183 An apparatus comprising a superconducting transition metal oxide having a superconductive onset temperature greater than or equal to 26°K, a temperature controller maintaining said superconducting transition metal oxide at a temperature less than said superconducting onset temperature and a current source flowing a superconducting current therein.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 184

Claim 184 recites:

CLAIM 184 An apparatus comprising a superconducting copper oxide having a superconductive onset temperature greater than or equal to 26°K, a temperature controller maintaining said superconducting copper oxide at a temperature less than said superconducting onset temperature and a current source flowing a superconducting current in said superconducting oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 185

Claim 185 which is allowed recites:

CLAIM 185 An apparatus comprising a superconducting oxide composition having a superconductive onset temperature greater than or equal to 26°K, a temperature controller maintaining said superconducting copper oxide at a temperature less than said superconducting onset temperature and a current source flowing a superconducting current therein, said composition comprising at least one each of rare earth, an alkaline earth, and copper.

CLAIM 186

Claim 186 which is allowed recites:

CLAIM 186 An apparatus comprising a superconducting oxide composition having a superconductive onset temperature greater than or equal to 26°K, a temperature controller maintaining said superconducting copper oxide at a temperature less than said superconducting onset temperature and a current source flowing a superconducting electrical current therein, said composition comprising at least one each of a Group III B element, an alkaline earth, and copper.

CLAIM 187

Claim 187 recites:

CLAIM 187 An apparatus comprising a superconducting electrical current in a transition metal oxide having a T_c greater than or equal to 26°K and maintaining said transition metal oxide at a temperature less than said T_c .

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 188

Claim 188 recites:

CLAIM 188 An apparatus comprising a current source flowing a superconducting current in a copper oxide having a T_c greater than or equal to 26°K and a temperature controller maintaining said copper oxide at a temperature less than said T_c .

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 189

Claim 189 which is allowed recites:

CLAIM 189 An apparatus comprising:

a composition of the formula $\text{BaLa}_{5-x}\text{Cu}_5\text{O}_{5(3-y)}$, wherein x is from about 0.75 to about 1 and y is the oxygen deficiency resulting from annealing said composition at temperatures from about 540°C to about 950°C and for times of about 15 minutes to about 12 hours, said composition having a metal oxide phase which exhibits a superconducting state at a critical temperature greater than or equal to 26°K;

a temperature controller maintaining the temperature of said composition at a temperature less than said critical temperature to induce said superconducting state in said metal oxide phase; and

a current source passing an electrical current through said composition while said metal oxide phase is in said superconducting state.

CLAIM 190

Claim 190 which is allowed recites:

CLAIM 190 An apparatus comprising a current source flowing a superconducting electrical current in a composition of matter having a T_c greater than or equal to 26°K, said composition comprising at least one each of a Group III B

element, an alkaline earth, and copper oxide and a temperature controller maintaining said composition of matter at a temperature less than T_c .

CLAIM 191

CLAIM 191 which is allowed recites:

CLAIM 191 An apparatus comprising a current source flowing a superconducting electrical current in a composition of matter having a T_c greater than or equal to 26°K , said composition comprising at least one each of a rare earth, alkaline earth, and copper oxide and a temperature controller maintaining said composition of matter at a temperature less than said T_c .

CLAIM 192

Claim 192 recites:

CLAIM 192 An apparatus comprising a current source flowing a superconducting electrical current in a composition of matter having a T_c greater than or equal to 26°K , said composition comprising at least one each of a rare earth, and copper oxide and a temperature controller maintaining said composition of matter at a temperature less than said T_c .

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 193

Claim 193 recites:

CLAIM 193 An apparatus comprising a current source flowing a superconducting electrical current in a composition of matter having a T_c greater than or equal to 26°K carrying, said composition comprising at least one each of a Group III B element, and copper oxide and a temperature controller maintaining said composition of matter at a temperature less than said T_c .

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 194

Claim 194 recites:

CLAIM 194 An apparatus comprising a current source flowing a superconducting electrical current in a transition metal oxide comprising a Tc greater than or equal to 26°K and a temperature controller maintaining said transition metal oxide at a temperature less than said Tc.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 195

Claim 195 recites:

CLAIM 195 An apparatus comprising a current source flowing a superconducting electrical current in a copper oxide composition of matter comprising a T_c greater than or equal to 26°K and a temperature controller maintaining said copper oxide composition of matter at a temperature less than said T_c .

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 196

Claim 196 which is allowed recites:

CLAIM 196 An apparatus comprising:

a composition including a transition metal, a Group III B element, an alkaline earth element, and oxygen, where said composition is a mixed transition metal oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K,

a temperature controller maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K, and

a current source passing an electrical current through said composition while said composition is in said superconducting state.

CLAIM 197

Claim 197 which is allowed recites:

CLAIM 197 The apparatus of claim 196, where said transition metal is copper.

CLAIM 198

Claim 198 recites:

CLAIM 198 A superconductive apparatus for causing electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement

Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 199

Claim 199 recites:

CLAIM 199 The superconductive apparatus according to claim 198 in which the copper-oxide compound of the superconductive composition includes at least one element selected from the group consisting of a rare-earth element, a Group III B element and an alkaline-earth element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 200

Claim 200 recites:

CLAIM 200 The superconductive apparatus according to claim 199 in which the rare-earth is lanthanum.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 201

Claim 201 recites:

CLAIM 201 The superconductive apparatus according to claim 199 in which the alkaline-earth element is barium.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 201

Claim 202 recites:

CLAIM 202 The superconductive apparatus according to claim 198 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 203

Claim 203 recites:

CLAIM 203 The superconductive apparatus according to claim 202 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 204

Claim 204 recites:

CLAIM 204 The superconductive apparatus according to claim 203 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 205

Claim 205 recites:

CLAIM 205 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the copper-oxide compound including at least one element selected from the group consisting of a rare-earth element, a Group III B element and an alkaline-earth element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 206

Claim 206 recites:

CLAIM 206 The superconductive apparatus according to claim 205 in which said at least one element is lanthanum.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 207

Claim 207 recites:

CLAIM 207 The superconductive apparatus according to claim 205 in which the alkaline-earth element is barium.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 208

Claim 208 recites:

CLAIM 208 The superconductive apparatus according to claim 205 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 209

Claim 209 recites:

CLAIM 209 The superconductive apparatus according to claim 208 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 210

Claim 210 recites:

CLAIM 210 The superconductive apparatus according to claim 209 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 211

Claim 211 recites:

CLAIM 211 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element, a rare earth element; and a Group III B element;
- (b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have

shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 212

Claim 212 recites:

CLAIM 212 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 213

Claim 213 which is allowed recites:

CLAIM 213 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;
- (b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

CLAIM 214

Claim 214 which is allowed recites:

CLAIM 214 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the copper-oxide compound including a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive-resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

CLAIM 215

Claim 215 which is allowed recites:

CLAIM 215 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal oxide compound having a substantially layered perovskite crystal structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;
- (b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition T_c of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

CLAIM 216

Claim 216 which is allowed recites:

CLAIM 216 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal-oxide compound having a substantially layered perovskite crystal structure, the transition metal-oxide compound including a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

CLAIM 217

Claim 217 recites:

CLAIM 217 An apparatus according to claim 182 wherein said composition comprises a substantially layered perovskite crystal structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 218

Claim 218 recites:

CLAIM 218 An apparatus according to claim 183 wherein said superconducting transition metal oxide comprises a substantially layered perovskite crystal structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 219

Claim 219 recites:

CLAIM 219 An apparatus according to claim 184 wherein said superconducting copper oxide comprises a substantially layered perovskite crystal structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 220

Claim 220 which is allowed recites:

CLAIM 220 An apparatus according to claim 185 wherein said superconducting oxide composition comprises a substantially layered perovskite crystal structure.

CLAIM 221

Claim 221 which is allowed recites:

CLAIM 221 An apparatus according to claim 186 wherein said superconducting oxide composition comprises a substantially layered perovskite crystal structure.

CLAIM 222

Claim 222 recites:

CLAIM 222 An apparatus according to claim 187 wherein said transition metal oxide comprises a substantially layered perovskite crystal structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 223

Claim 223 recites:

CLAIM 223 An apparatus according to claim 188 wherein said copper oxide comprises a substantially layered perovskite crystal structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 224

Claim 224 which is allowed recites:

CLAIM 224 An apparatus according to claim 189 wherein said composition comprises a substantially layered perovskite crystal structure.

CLAIM 225

Claim 225 which is allowed recites:

CLAIM 225 An apparatus according to claim 190 wherein said composition of matter comprises a substantially layered perovskite crystal structure.

CLAIM 226

Claim 226 which is allowed recites:

CLAIM 226 An apparatus according to claim 191 wherein said composition of matter comprises substantially layered perovskite crystal structure.

CLAIM 227

CLAIM 227 recites:

CLAIM 227 An apparatus according to claim 192 wherein said composition of matter comprises a substantially layered perovskite crystal structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 228

CLAIM 228 recites:

CLAIM 228 An apparatus according to claim 193 wherein said composition of matter comprises substantially layered perovskite crystal structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 229

CLAIM 229 recites:

CLAIM 229 An apparatus according to claim 194 wherein said transition metal oxide comprises substantially layered perovskite crystal structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 230

CLAIM 230 recites:

CLAIM 230 An apparatus according to claim 195 wherein
said copper oxide composition comprises substantially
layered perovskite crystal structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 231

Claim 231 which is allowed recites:

CLAIM 231 An apparatus comprising a composition of matter having a T_c greater than or equal to 26°K carrying a superconducting current, said composition comprising at least one each of a rare earth, an alkaline earth, and copper oxide.

CLAIM 232

CLAIM 232 recites:

CLAIM 232 An apparatus comprising:

a transition metal oxide comprising a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to 26°K,

a temperature controller for maintaining the temperature of said material at a temperature less than said critical temperature to produce said superconducting state in said phase, and

a source of an electrical supercurrent through said transition metal oxide while it is in said superconducting state.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by

Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 233

CLAIM 233 recites:

CLAIM 233 An apparatus according to claim 232, where said transition metal oxide is comprised of a transition metal capable of exhibiting multivalent states.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 234

CLAIM 234 recites:

CLAIM 234 An apparatus according to claim 232, where
said transition metal oxide is comprised of a Cu oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 235

Claim 235 which is allowed recites:

CLAIM 235 An apparatus comprising:

a composition including a transition metal, a rare earth or rare earth-like element, an alkaline earth element, and oxygen, where said composition is a mixed transition metal oxide comprising a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K,

a temperature controller for maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K, and

a source of an electrical current through said composition while said composition is in said superconducting state.

CLAIM 236

Claim 236 which is allowed recites:

CLAIM 236 An apparatus according to claim 235, where said transition metal is copper.

CLAIM 237

CLAIM 237 recites:

CLAIM 237 An apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K, a temperature controller for maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state, and

a source of an electrical current through said composition while said composition is in said superconductive state.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 238

CLAIM 238 recites:

CLAIM 238 An apparatus according to claim 237, where
said composition is comprised of a metal oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 239

CLAIM 239 recites:

CLAIM 239 An apparatus according to claim 238, where said composition is comprised of a transition metal oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 240

CLAIM 240 recites:

CLAIM 240 An apparatus capable of carrying electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a layer-type perovskite-like crystal structure, the composition comprising a superconductor transition temperature T_c of greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement

Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 241

Claim 241 which is allowed recites:

CLAIM 241 An apparatus according to claim 240 in which the copper-oxide compound of the superconductive composition includes at least one rare-earth or rare-earth-like element and at least one alkaline-earth element.

CLAIM 242

Claim 242 which is allowed recites:

CLAIM 242 An apparatus according to claim 241 in which the rare-earth or rare-earth-like element is lanthanum.

CLAIM 243

Claim 243 which is allowed recites:

CLAIM 243 An apparatus according to claim 241 in which the alkaline-earth element is barium.

CLAIM 244

CLAIM 244 recites:

CLAIM 244 An apparatus according to claim 240 in which
the copper-oxide compound of the superconductive
composition includes mixed valent copper ions.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 245

CLAIM 245 recites:

CLAIM 245 An apparatus according to claim 244 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 246

CLAIM 246 recites:

CLAIM 246 An apparatus according to claim 245 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 247

CLAIM 247 which is allowed recites:

CLAIM 247 An apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a layer-type perovskite-like crystal structure, the copper-oxide compound including at least one rare-earth or rare-earth-like element and at least one alkaline-earth element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

CLAIM 248

Claim 248 which is allowed recites:

CLAIM 248 An apparatus according to claim 247 in which the rare-earth or rare-earth-like element is lanthanum.

CLAIM 249

Claim 249 which is allowed recites:

CLAIM 249 An apparatus according to claim 247 in which the alkaline-earth element is barium.

CLAIM 250

Claim 250 which is allowed recites:

CLAIM 250 An apparatus according to claim 247 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

CLAIM 251

Claim 251 which is allowed recites:

CLAIM 251 An apparatus according to claim 250 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

CLAIM 252

Claim 252 which is allowed recites:

CLAIM 252 An apparatus according to claim 251 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

CLAIM 253

CLAIM 253 recites:

CLAIM 253 An apparatus comprising:

a copper oxide comprising a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to 26°K;

a temperature controller for maintaining the temperature of said material at a temperature less than said critical temperature to produce said superconducting state in said phase;

a source of an electrical supercurrent through said copper oxide while it is in said superconducting state;

said copper oxide includes at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the

Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 254

CLAIM 254 recites:

CLAIM 254 An apparatus comprising:

a composition including copper, oxygen and an element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, where said composition is a mixed copper oxide comprising a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K;

a temperature controller for maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K; and

a source of an electrical current through said composition while said composition is in said superconducting state.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei,

Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 255

CLAIM 255 recites:

CLAIM 255 An apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K;

a temperature controller for maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state;

a source of an electrical current through said composition while said composition is in said superconductive state; and

said composition including a copper oxide and an element selected from the group consisting of Group II A element, a rare earth element and a Group III B element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei,

Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 256

CLAIM 256 recites:

CLAIM 256 An apparatus capable of carrying an electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a layer-type perovskite-like crystal structure, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element, a rare earth element; and a Group III B element;
- (b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have

shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 257

CLAIM 257 recites:

CLAIM 257 An apparatus capable of carrying an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a layer-type perovskite-like crystal structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 258

Claim 258 which is allowed recites:

CLAIM 258 An apparatus comprising:

a copper oxide comprising a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to 26°K;

a temperature controller for maintaining the temperature of said material at a temperature less than said critical temperature to produce said superconducting state in said phase;

a source of an electrical supercurrent through said copper oxide while it is in said superconducting state;

said copper oxide includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element.

CLAIM 259

Claim 259 which is allowed recites:

CLAIM 259 An apparatus comprising:

a composition including copper, oxygen and an element selected from the group consisting of at least one Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, where said composition is a mixed copper oxide comprising a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K;

a temperature for maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K; and

a source of an electrical current through said composition while said composition is in said superconducting state.

CLAIM 260

Claim 260 which is allowed recites:

CLAIM 260 An apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K;

a temperature for maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state;

a source of an electrical current through said composition while said composition is in said superconductive state; and

said composition including a copper oxide and at least one element selected from the group consisting of Group II A and at least one element selected from the group consisting of a rare earth element and a Group III B element.

CLAIM 261

Claim 261 which is allowed recites:

CLAIM 261 An apparatus capable of carrying an electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a layer-type perovskite-like crystal structure, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element and at least one

element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 262

Claim 262 which is allowed recites:

CLAIM 262 An apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a layer-type perovskite-like crystal structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive-resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-

zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K ;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 263

Claim 263 which is allowed recites:

CLAIM 263 An apparatus comprising:

a transition metal oxide comprising a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to 26°K ;

a temperature controller for maintaining the temperature of said material at a temperature less than said critical temperature to produce said superconducting state in said phase;

a source of an electrical supercurrent through said transition metal oxide while it is in said superconducting state;

said transitional metal oxide includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element.

CLAIM 264

Claim 264 which is allowed recites:

CLAIMS 264 An apparatus comprising:

a composition including a transition metal, oxygen and an element selected from the group consisting of at least one Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, where said composition is a mixed transitional metal oxide formed from said transition metal and said oxygen, said mixed transition metal oxide comprising a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K;

a temperature controller for maintaining said composition in said

CLAIM 265

Claim 265 which is allowed recites:

CLAIM 265 An apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K;

a temperature controller for maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state;

a source of an electrical current through said composition while said composition is in said superconductive state; and

said composition including a transitional metal oxide and at least one element selected from the group consisting of Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element.

CLAIM 266

Claim 266 which is allowed recites:

CLAIM 266 An apparatus capable of carrying an electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal oxide compound comprising a layer-type perovskite-like crystal structure, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;
- (b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition T_c of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

CLAIM 267

Claim 267 which is allowed recites:

CLAIM 267 An apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal-oxide compound comprising a layer-type perovskite-like crystal structure, the transition metal-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 268

CLAIM 268 recites:

CLAIM 268 An apparatus comprising:

a copper oxide comprising a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to 26°K;

a temperature controller for maintaining the temperature of said material at a temperature less than said critical temperature to produce said superconducting state in said phase;

a source for an electrical supercurrent through said copper oxide while it is in said superconducting state;

said copper oxide includes at least one element selected from group consisting of a Group II A element, at least one element selected from the group consisting of a rare earth element and at least one element selected from the group consisting of a Group III B element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of

Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 269

Claim 269 which is allowed recites:

CLAIM 269 An apparatus comprising:

a composition including copper, oxygen and an element selected from the group consisting of at least one Group II A element and at least one element selected from the group consisting of a rare earth element at least one element selected from the group consisting of a Group III B element, where said composition is a mixed copper oxide comprising a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K;

a temperature controller for maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K; and

a source of an electrical current through said composition while said composition is in said superconducting state.

CLAIM 270

Claim 270 which is allowed recites:

CLAIM 270 An apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K;

a temperature controller for maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state;

a source of an electrical current through said composition while said composition is in said superconductive state; and

said composition including a copper oxide and at least one element selected from the group consisting of Group II A element, at least one element selected from the group consisting of a rare earth element and at least one element selected from the group consisting of a Group III B element.

CLAIM 271

Claim 271 which is allowed recites:

CLAIM 271 An apparatus for causing an electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a layer-type perovskite-like crystal structure, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element, at least one element selected from the group consisting of a rare earth element and at least one element selected from the group consisting of a Group III B element;
- (b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

CLAIM 272

Claim 272 which is allowed recites:

CLAIM 272 An apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a layer-type perovskite-like crystal structure, the copper-oxide compound including at least one element selected from the group consisting of a group II A element, at least one element selected from the group consisting of a rare earth element and at least one element selected from the group consisting of a Group III B element, the composition comprising a superconductive-resistive transition temperature defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

CLAIM 273

CLAIM 273 recites:

CLAIM 273 An apparatus comprising a composition comprising a transition temperature greater than or equal to 26°K, the composition including a rare earth or alkaline earth element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a temperature controller for maintaining said composition at said temperature to exhibit said superconductivity and a source of an electrical superconducting current through said composition with said phrase exhibiting said superconductivity.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 274

Claim 274 recites:

CLAIM 274 An apparatus comprising providing a superconducting transition metal oxide comprising a superconductive onset temperature greater than or equal to 26°K, a temperature controller for maintaining said superconducting transition metal oxide at a temperature less than said superconducting onset temperature and a source of a superconducting current therein.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 275

Claim 275 recites:

CLAIM 275 An apparatus comprising a superconducting copper oxide comprising a superconductive onset temperature greater than or equal to 26°K, a temperature controller for maintaining said superconducting copper oxide at a temperature less than said superconducting onset temperature and a source of a superconducting current in said superconducting oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 276

Claim 276 which is allowed recites:

CLAIM 276 An apparatus comprising a superconducting oxide composition comprising a superconductive onset temperature greater than or equal to 26°K , a temperature controller for maintaining said superconducting copper oxide at a temperature less than said superconducting onset temperature and a source of a superconducting current therein, said composition comprising at least one each of rare earth, an alkaline earth, and copper.

CLAIM 277

Claim 277 which is allowed recites:

CLAIM 277 An apparatus comprising a superconducting oxide composition comprising a superconductive onset temperature greater than or equal to 26°K, a temperature controller for maintaining said superconducting copper oxide at a temperature less than said superconducting onset temperature and a source of a superconducting electrical current therein, said composition comprising at least one each of a Group III B element, an alkaline earth, and copper.

CLAIM 278

CLAIM 278 recites:

CLAIM 278 An apparatus comprising a source of a superconducting electrical current in a transition metal oxide comprising a T_c greater than or equal to 26°K and a temperature controller for maintaining said transition metal oxide at a temperature less than said T_c .

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 279

CLAIM 279 recites:

CLAIM 279 An apparatus comprising a source of a superconducting current in a copper oxide comprising a T_c greater than or equal to 26°K and a temperature controller for maintaining said copper oxide at a temperature less than said T_c .

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 280

Claim 280 which is allowed recites:

CLAIM 280 An apparatus comprising:

a composition of the formula $Ba_xLa_{x-5}Cu_5O_y$, wherein x is from about 0.75 to about 1 and y is the oxygen deficiency resulting from annealing said composition at temperatures from about 540°C to about 950°C and for times of about 15 minutes to about 12 hours, said composition comprising a metal oxide phase which exhibits a superconducting state at a critical temperature greater than or equal to 26°K;

a temperature controller for maintaining the temperature of said composition at a temperature less than said critical temperature to induce said superconducting state in said metal oxide phase; and

a source of an electrical current through said composition while said metal oxide phase is in said superconducting state.

CLAIM 281

Claim 281 which is allowed recites:

CLAIM 281 An apparatus comprising a source of a superconducting electrical current in a composition of matter comprising a T_c greater than or equal to 26°K, said

composition comprising at least one each of a III B element, an alkaline earth, and copper oxide and a temperature controller for maintaining said composition of matter at a temperature less than T_c .

CLAIM 282

Claim 282 which is allowed recites:

CLAIM 282 An apparatus comprising a source of a superconducting electrical current in a composition of matter comprising a T_c greater than or equal to 26°K, said composition comprising at least one each of a rare earth, alkaline earth, and copper oxide and a temperature controller for maintaining said composition of matter at a temperature less than said T_c .

CLAIM 283

CLAIM 283 recites:

CLAIM 283 An apparatus comprising a source of a superconducting electrical current in a composition of matter comprising a T_c greater than or equal to 26°K , said composition comprising at least one each of a rare earth, and copper oxide and a temperature controller for maintaining said composition of matter at a temperature less than said T_c .

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 284

CLAIM 284 recites:

CLAIM 284 An apparatus comprising a source of a superconducting electrical current in a composition of matter comprising a T_c greater than or equal to 26°K carrying, said composition comprising at least one each of a III B element, and copper oxide and a temperature controller for maintaining said composition of matter at a temperature less than said T_c .

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 285

CLAIM 285 recites:

CLAIM 285 An apparatus comprising a source of a superconducting electrical current in a transition metal oxide comprising a T_c greater than or equal to 26°K and a temperature controller for maintaining said transition metal oxide at a temperature less than said T_c .

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 286

CLAIM 286 recites:

CLAIM 286 An apparatus comprising a source of a superconducting electrical current in a copper oxide composition of matter comprising a T_c greater than or equal to 26°K and a temperature controller for maintaining said copper oxide composition of matter at a temperature less than said T_c .

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 287

Claim 287 which is allowed recites:

CLAIM 287 An apparatus comprising:

a composition including a transition metal, a group IIIB element, an alkaline earth element, and oxygen, where said composition is a mixed transition metal oxide comprising a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K,

a temperature controller for maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K, and

a source of an electrical current through said composition while said composition is in said superconducting state.

CLAIM 288

Claim 288 which is allowed recites:

CLAIM 288 An apparatus according to claim 287, where said transition metal is copper.

CLAIM 289

CLAIM 289 recites:

CLAIM 289 An apparatus for causing electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a substantially layered perovskite crystal structure, the composition comprising a superconductor transition temperature T_c of greater than or equal to 26°K;
- b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement

Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 290

CLAIM 290 recites:

CLAIM 290 An apparatus according to claim 289 in which the copper-oxide compound of the superconductive composition includes at least one element selected from the group consisting of a rare-earth element and a Group III B element and at least one alkaline-earth element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 291

CLAIM 291 recites:

CLAIM 291 An apparatus according to claim 290 in which the rare-earth or element is lanthanum.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 292

CLAIM 292 recites:

CLAIM 292 An apparatus according to claim 290 in which
the alkaline-earth element is barium.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 293

CLAIM 293 recites:

CLAIM 293 An apparatus according to claim 289 in which
the copper-oxide compound of the superconductive
composition includes mixed valent copper ions.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 294

CLAIM 294 recites:

CLAIM 294 An apparatus according to claim 293 in which
the copper-oxide compound includes at least one element in
a nonstoichiometric atomic proportion.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 295

CLAIM 295 recites:

CLAIM 295 An apparatus according to claim 294 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 296

Claim 296 which is allowed recites:

CLAIM 296 An apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a substantially layered perovskite crystal structure, the copper-oxide compound including at least one element selected from the group consisting of a rare-earth element and a Group III B element and at least one alkaline-earth element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

CLAIM 297

Claim 297 which is allowed recites:

CLAIM 297 An apparatus according to claim 296 in which said at least one element is lanthanum.

CLAIM 298

Claim 298 which is allowed recites:

CLAIM 298 An apparatus according to claim 296 in which the alkaline-earth element is barium.

CLAIM 299

Claim 299 which is allowed recites:

CLAIM 299 An apparatus according to claim 296 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

CLAIM 300

Claim 300 which is allowed recites:

CLAIM 300 An apparatus according to claim 299 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

CLAIM 301

Claim 301 which is allowed recites:

CLAIM 301 An apparatus according to claim 300 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

CLAIM 302

CLAIM 302 recites:

CLAIM 302 An apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a substantially layered perovskite crystal structure, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element, a rare earth element; and a Group III B element;
- (b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have

shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 303

CLAIM 303 recites:

CLAIM 303 An apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a substantially layered perovskite crystal structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art

cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 304

Claim 304 which is allowed recites:

CLAIM 304 An apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a substantially layered perovskite crystal structure, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;
- (b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

CLAIM 305

Claim 305 which is allowed recites:

CLAIM 305 An apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a substantially layered perovskite crystal structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive-resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 306

Claim 306 which is allowed recites:

CLAIM 306 An apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal oxide compound comprising a substantially layered perovskite crystal structure, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 307

Claim 307 which is allowed recites:

CLAIM 307 An apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal-oxide compound comprising a substantially layered perovskite crystal structure, the transition metal-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 308

CLAIM 308 recites:

CLAIM 308 An apparatus according to claim 273 wherein said composition comprises a substantially layered perovskite crystal structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 309

CLAIM 309 recites:

CLAIM 309 An apparatus according to claim 274 wherein said superconducting transition metal oxide comprises a substantially layered perovskite crystal structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 310

CLAIM 310 recites:

CLAIM 310 An apparatus according to claim 275 wherein said superconducting copper oxide comprises a substantially layered perovskite crystal structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 311

Claim 311 which is allowed recites:

CLAIM 311 An apparatus according to claim 276 wherein said superconducting oxide composition comprises a substantially layered perovskite crystal structure.

CLAIM 312

Claim 312 which is allowed recites:

CLAIM 312 An apparatus according to claim 277 wherein said superconducting oxide composition comprises a substantially layered perovskite crystal structure.

CLAIM 313

CLAIM 313 recites:

CLAIM 313 An apparatus according to claim 278 wherein said transition metal oxide comprises a substantially layered perovskite crystal structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 314

CLAIM 314 recites:

CLAIM 314 An apparatus according to claim 279 wherein said copper oxide comprises a substantially layered perovskite crystal structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 315

Claim 315 which is allowed recites:

CLAIM 315 An apparatus according to claim 280 wherein
said composition comprises a substantially layered
perovskite crystal structure.

CLAIM 316

Claim 316 which is allowed recites:

CLAIM 316 An apparatus according to claim 281 wherein
said composition of matter comprises a substantially layered
perovskite crystal structure.

CLAIM 317

Claim 317 which is allowed recites:

CLAIM 317 An apparatus according to claim 282 wherein
said composition of matter comprises substantially layered
perovskite crystal structure.

CLAIM 318

CLAIM 318 recites:

CLAIM 318 An apparatus according to claim 283 wherein
said composition of matter comprises a substantially layered
perovskite crystal structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 319

CLAIM 319 recites:

CLAIM 319 An apparatus according to claim 284 wherein said composition of matter comprises substantially layered perovskite crystal structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 320

CLAIM 320 recites:

CLAIM 320 An apparatus according to claim 285 wherein said transition metal oxide comprises substantially layered perovskite crystal structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 321

CLAIM 321 recites:

CLAIM 321 An apparatus according to claim 286 wherein
said copper oxide composition comprises substantially
layered perovskite crystal structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 322

CLAIM 322 recites:

CLAIM 322 A superconductive combination according to anyone of claims 84 or 85, wherein said mixed transition metal oxide can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors. .

CLAIM 323

CLAIM 323 recites:

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 324

CLAIM 324 recites:

CLAIM 324 A combination according to anyone of claims 91, 92 or 36 to 39, wherein said composition can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 325

CLAIM 325 recites:

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 326

CLAIM 326 recites:

CLAIM 326 An apparatus according to anyone of claims 93 to 95 or 138, wherein said mixed copper oxide can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 327

CLAIM 327 recites:

CLAIM 327 A combination according to anyone of claims 64 or 135, wherein said mixed copper oxide can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 328

CLAIM 328 recites:

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383 or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 329

CLAIM 329 recites:

CLAIM 329 A superconductive combination according to anyone of claims 12 to 23, 110, 131, 132 or 367-370, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 330

Claim 330 which is allowed recites:

CLAIM 330 An apparatus according to anyone of claims 185 or 220, wherein said superconductive composition can be made according to known principles of ceramic science.

CLAIM 331

CLAIM 331 recites:

CLAIM 331 A device according to claim 111, wherein said
superconductive transition metal oxide can be made
according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 332

CLAIM 332 recites:

CLAIM 332 An apparatus according to anyone of claims 183, 217, 218, 274 or 309, wherein said superconductive transition metal oxide can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to

metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 333

CLAIM 333 recites:

CLAIM 333 A device according to claim 112, wherein said superconductive copper oxide can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 334

CLAIM 334 recites:

CLAIM 334 An apparatus according to anyone of claims 275, 276, 310 or 311, wherein said superconductive copper oxide can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 335

Claim 335 which is allowed recites:

CLAIM 335 A device according to claim 113, wherein said superconductive oxide composition can be made according to known principles of ceramic science.

CLAIM 336

Claim 336 which is allowed recites:

CLAIM 336 An apparatus according to anyone of claims 186, 221, 272, 312 or 413, wherein said superconductive oxide composition can be made according to known principles of ceramic science.

CLAIM 337

CLAIM 337 recites:

CLAIM 337 A device according to anyone of claims 114 or 117, wherein said transition metal oxide can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 338

CLAIM 338 recites:

CLAIM 338 An apparatus according to anyone of claims 24 to 26, 60 to 63, 116, 141 to 143, 172, 187, 222, 232 to 234, 263, 278, 285, 287, 288, 313 or 320, wherein said transition metal oxide can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to

metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 339

CLAIM 339 recites:

CLAIM 339 A superconductive apparatus according to anyone of claims 27-32, 132 or 370, wherein said transition metal oxide can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states

" Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 340

CLAIM 340 recites:

CLAIM 340 An invention according to claim 118, wherein said transition metal oxide can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states

" Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 341

CLAIM 341 recites:

CLAIM 341 A transition metal oxide device according to claim 128, wherein said transition metal oxide can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 342

CLAIM 342 recites:

CLAIM 342 An apparatus according to anyone of claims 40 to 45, wherein said superconductor can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 343

CLAIM 343 recites:

CLAIM 343 A device according to anyone of claims 119 or 121, wherein said copper oxide can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 344

CLAIM 344 recites:

CLAIM 344 An apparatus according to claim 120, wherein said copper oxide can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 345

CLAIM 345 recites:

CLAIM 345 An invention according to claim 122, wherein said copper oxide can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 346

Claim 346 which is allowed recites:

CLAIM 346 A superconductive apparatus according to claim 123, wherein said copper oxide can be made according to known principles of ceramic science.

CLAIM 347

CLAIM 347 recites:

CLAIM 347 A copper oxide device according to claim 129,
wherein said copper oxide can be made according to known
principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 348

CLAIM 348 recites:

CLAIM 348 An apparatus according to anyone of claims 162, 167, 177, 188, 223, 253, 258, 268, 269, 270, 279 or 314, wherein said copper oxide can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 349

CLAIM 349 recites:

CLAIM 349 A combination according to claim 57, wherein said superconductive oxide can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 350

CLAIM 350 recites:

CLAIM 350 A combination according to anyone of claims 58 or 373, wherein said copper oxide conductor can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 351

CLAIM 351 recites:

CLAIM 351 A combination according to claim 59, wherein said ceramic-like material can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 352

CLAIM 352 recites:

CLAIM 352 A superconductive combination according to anyone of claims 69 to 71 or 134, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 353

CLAIM 353 recites:

CLAIM 353 A superconductive apparatus according to anyone of claims 139, 140, 149 to 155, 156 to 161, 170, 171, 175, 176, 180, 181, 205 to 216, 387-393, or 396-401, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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converts them to metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 354

CLAIM 354 recites:

CLAIM 354 An apparatus according to anyone of claims 165, 166, 185, 220, 240 to 246, 247 to 252, 261, 262, 289, 290 to 301, 394, 395, 402-406, 409 or 410, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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converts them to metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 355

CLAIM 355 recites:

CLAIM 355 A combination according to anyone of claims 77 to 81, 186, 379 or 380, wherein said mixed copper oxide composition can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 356

CLAIM 356 recites:

CLAIM 356 A device according to anyone of claims 124 to 127, wherein said composition of matter can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 357

CLAIM 357 recites:

CLAIM 357 An apparatus according to anyone of claims 190 to 194, 225 to 229, 231, 256, 257, 266, 267, 271, 272, 281 to 284, 317 to 319, 407, or 411 to 413, wherein said composition of matter can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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converts them to metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 358

Claim 358 which is allowed recites:

CLAIM 358 An apparatus according to anyone of claims 186 or 221, wherein said superconductive oxide composition can be made according to known principles of ceramic science.

CLAIM 359

CLAIM 359 recites:

CLAIM 359 An apparatus according to anyone of claims 195 or 230, wherein said copper oxide composition can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 360

CLAIM 360 recites:

CLAIM 360 An apparatus according to anyone of claims 286 or 321, wherein said copper oxide composition can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 361

CLAIM 361 recites:

CLAIM 361 A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or an element comprising a rare earth characteristic, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a temperature controller for maintaining said composition at said temperature to exhibit said superconductivity and a current source for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 362

CLAIM 362 recites:

CLAIM 362 The superconducting apparatus of claim 361,
further including an alkaline earth element substituted for at
least one atom of said rare earth or element comprising a
rare earth characteristic in said composition.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 363

CLAIM 363 recites:

CLAIM 363 The superconducting apparatus of claim 362,
where said rare earth or element comprising a rare earth
characteristic is selected from the group consisting of La,
Nd, and Ce.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 364

CLAIM 364 recites:

CLAIM 364 The superconducting apparatus of claim 361,
where said phase is crystalline with a structure comprising a
perovskite characteristic.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 365

CLAIM 365 recites:

CLAIM 365 The superconducting apparatus of claim 362, where said phase is crystalline with a structure comprising a perovskite characteristic.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 366

CLAIM 366 recites:

CLAIM 366 The superconducting apparatus of claim 361,
where said phase exhibits a crystalline structure comprising
a layered characteristic.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 367

CLAIM 367 recites:

CLAIM 367 The combination of claim 15, where said additional element is a rare earth or an element comprising a rare earth characteristic.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 368

CLAIM 368 recites:

CLAIM 368 The combination of claim 12, where said composition includes a superconducting phase comprising a perovskite characteristic.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 369

CLAIM 369 recites:

CLAIM 369 The combination of claim 20, where said substituted transition metal oxide has a structure comprising a layered characteristic.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 370

CLAIM 370 recites:

CLAIM 370 The superconducting apparatus of claim 31, where said crystalline structure comprises a layered characteristic, enhancing the number of Jahn-Teller polarons in said composite.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 371

CLAIM 371 recites:

CLAIM 371 The superconductive apparatus of claim 48,
where said substitutions include a rare earth or an element
comprising a rare earth characteristic.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 372

CLAIM 372 recites:

CLAIM 372 A superconductive apparatus comprised of a copper oxide comprising a crystalline structure comprising a layered characteristic and at least one additional element substituted in said crystalline structure, said structure being oxygen deficient and exhibiting a superconducting onset temperature greater than or equal to 26°K.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 373

CLAIM 373 recites:

CLAIM 373 A combination, comprised of:

a copper oxide superconductor having a superconductor onset temperature greater than about 26°K including an element which results in a mixed valent state in said oxide, said oxide being crystalline and comprising a structure comprising a layered characteristic,

a current source for passing a superconducting current through said copper oxide while it is maintained at a temperature greater than or equal to 26°K and less than said superconducting onset temperature, and

a temperature controller for cooling said copper oxide to a superconductive state at a temperature greater than or equal to 26°K and less than said superconducting onset temperature.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the

Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 374

CLAIM 374 recites:

CLAIM 374 A combination, comprised of:

a material comprising a ceramic characteristic comprising an onset of superconductivity at an onset temperature greater than or equal to 26°K,

a current source for passing a superconducting electrical current through said material comprising a ceramic characteristic while said material is maintained at a temperature greater than or equal to 26°K and less than said onset temperature, and

a temperature controller for cooling said superconducting material having a ceramic characteristic to a superconductive state at a temperature greater than or equal to 26°K and less than said onset temperature, said material being superconductive at temperatures below said onset temperature and a ceramic at temperatures above said onset temperature.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of

Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 375

Claim 375 which is allowed recites:

CLAIM 375 An apparatus comprising a composition exhibiting superconductivity at temperatures greater than or equal to 26°K, said composition being a material comprising a ceramic characteristic in the RE-AE-TM-O system, where RE is a rare earth or near rare earth element, AE is an alkaline earth element, TM is a multivalent transition metal element having at least two valence states in said composition, and O is oxygen, the ratio of the amounts of said transition metal in said two valence states being determined by the ratio RE : AE, a source of current for passing a superconducting electric current in said transition metal oxide, and a cooling apparatus for maintaining said transition metal oxide below said onset temperature and at a temperature greater than or equal to 26°K.

CLAIM 376

CLAIM 376 recites:

CLAIM 376 The combination of claim 71, where said mixed copper oxide further includes a rare earth or an element comprising a rare earth characteristic.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 377

Claim 377 is withdrawn.

CLAIM 378

Claim 378 is withdrawn.

CLAIM 379

**THIS CLAIM SHOULD BE ALLOWED FOR THE SAME
REASON THAT CLAIM 77 IS ALLOWED**

CLAIM 379 recites:

CLAIM 379 A combination, comprising:

a mixed copper oxide composition including an alkaline earth element (AE) and a rare earth or element (RE) comprising a rare earth characteristic, said composition comprising a crystalline structure comprising a layered characteristic and multi-valent oxidation states, said composition exhibiting a substantially zero resistance to the flow of electrical current therethrough when cooled to a superconducting state at a temperature greater than or equal to 26°K, said mixed copper oxide having a superconducting onset temperature greater than or equal to 26°K, and

a current source for passing an electrical superconducting current through said composition when said composition exhibits substantially zero resistance at a temperature greater than or equal to 26°K and less than said onset temperature.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have

shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 380

THIS CLAIM SHOULD BE ALLOWED FOR THE SAME REASON THAT CLAIM 77 IS ALLOWED

CLAIM 380 recites:

CLAIM 380 The combination of claim 379, wherein said crystalline structure comprises a perovskite characteristic.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 381

Claim 381 which is allowed recites:

CLAIM 381 An apparatus comprising a superconductor having a superconducting onset temperature greater than or equal to 26°K, said superconductor being comprised of a rare earth or an element (RE) comprising a rare earth characteristic, an alkaline earth element (AE), a transition metal element (TM), and Oxygen (O) and having the general formula RE-AE-TM-O, said superconductor being made by a method comprising the steps of combining said rare earth or element comprising a rare earth characteristic, said alkaline earth element and said transition metal element in the presence of oxygen to produce a mixed transition metal oxide including said rare earth or element comprising a rare earth characteristic and said alkaline earth element therein, and

heating said mixed transition metal oxide to produce superconductor having a crystalline structure comprising a layered characteristic and exhibiting a superconducting onset temperature greater than or equal to 26°K, said superconductor having a non-stoichiometric amount of oxygen therein.

CLAIM 382

CLAIM 382 recites:

CLAIM 382 The apparatus of claim 93, where said copper oxide material exhibits a crystalline structure comprising a layered characteristic.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 383

CLAIM 383 recites:

CLAIM 383 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition comprising a copper-oxide compound having a crystal structure comprising a perovskite characteristic and a layered characteristic, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a current source for causing an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement

Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 384

Claim 384 which is allowed recites:

CLAIM 384 The superconductive apparatus according to claim 383 in which the copper-oxide compound of the superconductive composition includes at least one rare-earth or element comprising a rare earth characteristic and at least one alkaline-earth element.

CLAIM 385

Claim 385 which is allowed recites:

CLAIM 385 The superconductive apparatus according to claim 384 in which the rare-earth or element comprising a rare earth characteristic is lanthanum.

CLAIM 386

Claim 386 which is allowed recites:

CLAIM 386 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal

structure comprising a layered characteristic and a perovskite characteristic, the copper-oxide compound including at least one rare-earth or element comprising a rare earth characteristic and at least one alkaline-earth element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{q=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{q=0}$ of the superconductive composition; and

(c) a current source for causing an electric current to flow in the superconductor element.

CLAIM 387

Claim 387 which is allowed recites:

CLAIM 387 The superconductive apparatus according to claim 386 in which the rare-earth or an element comprising a rare earth characteristic is lanthanum.

CLAIM 388

Claim 388 which is allowed recites:

CLAIM 388 An apparatus comprising:

a composition including a transition metal, a rare earth or an element comprising a rare earth characteristic, an alkaline earth element, and oxygen, where said composition is a mixed transition metal oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K,

a temperature controller maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K, and

a current source passing an electrical current through said composition while said composition is in said superconducting state.

CLAIM 389

CLAIM 389 recites:

CLAIM 389 A superconductive apparatus for causing electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) causing an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of

Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 390

Claim 390 which is allowed recites:

CLAIM 390 The superconductive apparatus according to claim 389 in which the copper-oxide compound of the superconductive composition includes at least one rare-earth or an element comprising a rare earth characteristic and at least one alkaline-earth element.

CLAIM 391

Claim 391 which is allowed recites:

CLAIM 391 The superconductive apparatus according to claim 390 in which the rare-earth or an element comprising a rare earth characteristic is lanthanum.

CLAIM 392

Claim 392 which is allowed recites:

CLAIM 392 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal

structure comprising a layered characteristic and a perovskite characteristic, the copper-oxide compound including at least one rare-earth or rare-earth-like element and at least one alkaline-earth element, the composition having a superconductive/resistive-transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 393

Claim 393 which is allowed recites:

CLAIM 393 The superconductive apparatus according to claim 392 in which the rare-earth or an element comprising a rare earth characteristic is lanthanum.

CLAIM 394

CLAIM 394 recites:

CLAIM 394 An apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element, a rare earth element; and a Group III B element;
- (b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than

those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, News and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 395

CLAIM 395 recites:

CLAIM 395 An apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 396

Claim 396 which is allowed recites:

CLAIM 396 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;
- (b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

CLAIM 397

Claim 397 which is allowed recites:

CLAIM 397 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive-resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 398

Claim 398 which is allowed recites:

CLAIM 398 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes an element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 399

Claim 399 which is allowed recites:

CLAIM 399 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the transition metal-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-

resistivity intercept temperature $T_p=0$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 400

Claim 400 which is allowed recites:

CLAIM 400 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes a Group II A element, and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 401

Claim 401 which is allowed recites:

CLAIM 401 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the copper-oxide compound including Group II A element, and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition having a superconductive-resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-

resistivity intercept temperature $T_p=0$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 402

CLAIM 402 recites:

CLAIM 402 An apparatus capable of carrying electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the composition comprising a superconductor transition temperature T_c of greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of

Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 403

Claim 403 which is allowed recites:

CLAIM 403 An apparatus according to claim 402 in which the copper-oxide compound of the superconductive composition includes at least one rare-earth or an element comprising a rare earth characteristic and at least one alkaline-earth element.

CLAIM 404

Claim 404 which is allowed recites:

CLAIM 404 An apparatus according to claim 403 in which the rare-earth or element comprising a rare earth characteristic is lanthanum.

CLAIM 405

Claim 405 which is allowed recites:

CLAIM 405 An apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a layer-type perovskite-like crystal structure, the copper-oxide

compound comprising at least one rare-earth or element comprising a rare earth characteristic and at least one alkaline-earth element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 406

Claim 406 which is allowed recites:

CLAIM 406 An apparatus according to claim 405 in which the rare-earth or element comprising a rare earth characteristic is lanthanum.

CLAIM 407

CLAIM 407 recites:

CLAIM 407 An apparatus capable of carrying an electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element, a rare earth element; and a Group III B element;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than

those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 408

CLAIM 408 recites:

CLAIM 408 An apparatus capable of carrying an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 409

Claim 409 which is allowed recites:

CLAIM 409 An apparatus capable of carrying an electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 410

Claim 410 which is allowed recites:

CLAIM 410 An apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive-resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

CLAIM 411

Claim 411 which is allowed recites:

CLAIM 411 An apparatus capable of carrying an electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 412

Claim 412 which is allowed recites:

CLAIM 412 An apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the transition metal-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

CLAIM 413

Claim 413 which is allowed recites:

CLAIM 413 An apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the copper-oxide compound including at least one element selected from the group consisting of a group II A element, at least one element selected from the group consisting of a rare earth element and at least one element selected from the group consisting of a Group III B element, the composition comprising a superconductive-resistive transition temperature defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 414

CLAIM 414 recites:

CLAIM 414 A superconducting apparatus according to anyone of claims 361-365 or 366, wherein said composition can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states

"Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 415

CLAIM 415 recites:

CLAIM 415 A superconducting combination according to anyone of claims 367, 368 or 369, wherein said composition can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 416

CLAIM 416 recites:

CLAIM 416 A superconducting apparatus according to anyone of claims 370 or 371, wherein said composition can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 417

CLAIM 417 recites:

CLAIM 417 A superconducting apparatus according to claim 372, wherein said copper oxide can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 418

CLAIM 418 recites:

CLAIM 418 A combination according to claim 373, wherein
said copper oxide can be made according to known
principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 419

CLAIM 419 recites:

CLAIM 419 A combination according to claim 374, wherein
said material can be made by known principles of ceramic
science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 420

CLAIM 420 recites:

CLAIM 420 A apparatus according to claim 375, wherein
said composition can be made by known principles of
ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 421

CLAIM 421 recites:

CLAIM 421 A combination according to claim 376, wherein
said mixed copper oxide can be made by known principles of
ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 422

CLAIM 422 recites:

CLAIM 422 A combination according to anyone of claims 379 or 380, wherein said mixed copper oxide can be made by known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 423

CLAIM 423 recites:

CLAIM 423 A apparatus according to claim 382, wherein
said copper oxide material can be made by known principles
of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 424

CLAIM 424 recites:

CLAIM 424 A superconductive apparatus according to anyone of claims 383, 384, 385, 386, 387 and 389, wherein said composition can be made by known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 425

CLAIM 425 recites:

CLAIM 425 A apparatus according to claim 388, wherein
said composition can be made according to known principles
of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 426

CLAIM 426 recites:

CLAIM 426 A superconductive apparatus according to anyone of claims 389 to 400 or 401, wherein said superconductive composition can be made by known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 427

CLAIM 427 recites:

CLAIM 427 A apparatus according to anyone of claims 402 to 412 or 413, wherein said superconductive composition can be made by known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states

"Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 428

CLAIM 428 recites:

CLAIM 428 An apparatus capable of carrying electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

a superconductive element comprising a superconductive composition, said superconductive composition comprising O and at least one element selected from the group consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu; and

said composition comprising a superconductor transition temperature T_c of greater than or equal to 26°K.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 429

CLAIM 429 recites:

CLAIM 429 An apparatus according to claim 428, further including:

a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

a source of an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 430

CLAIM 430 recites:

CLAIM 430 An apparatus according to claim 428, wherein said composition comprises a substantially layered structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 431

CLAIM 431 recites:

CLAIM 431 An apparatus according to claim 429, wherein said composition comprises a substantially layered structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 432

CLAIM 432 recites:

CLAIM 432 An apparatus according to anyone of claims 428 to 430 or 431, wherein said composition comprises a substantially perovskite crystal structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 433

CLAIM 433 recites:

CLAIM 433 An apparatus according to any one of claims 428 to 430 or 431, wherein said composition comprises a perovskite-like structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 434

CLAIM 434 recites:

CLAIM 434 An apparatus according to any one of claims 428 to 430 or 431, wherein said composition comprises a perovskite characteristic.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 435

CLAIM 435 recites:

CLAIM 435 An apparatus according to any one of claims 428 to 430 or 431, wherein said composition comprises a perovskite related structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 436

CLAIM 436 recites:

CLAIM 436 An apparatus according to anyone of claims 428 to 431 or 432, wherein said composition can be made according to known principals of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states

"Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 437

CLAIM 437 recites:

CLAIM 437 An apparatus according to claim 88 wherein
said composition is an oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 438

CLAIM 438 recites:

CLAIM 438 An apparatus comprising: a means for conducting a superconducting current at a temperature greater than or equal to 26°K and a current source for providing an electric current to flow in said means for conducting a superconducting current.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

This claim is in means plus function form and under *In re Donaldson* 29 USPQ 2d1845 (Fed. Cir. 1994) should be allowed since the Examiner has allowed claims to the specific examples described in Applicants' specification which corresponds to all of the allowed claims. The Examiner provides no reason for not following *In re Donaldson*.

CLAIM 439

CLAIM 439 recites:

CLAIM 439 An apparatus according to claim 438, wherein said means for conducting a superconductive current comprises a Tc greater than or equal to 26°K.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 440

CLAIM 440 recites:

CLAIM 440 An apparatus according to claim 438, further including a temperature controller for maintaining said means for conducting a superconducting current at a said temperature.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

This claim is in means plus function form and under *In re Donaldson* 29 USPQ 2d1845 (Fed. Cir. 1994) should be allowed since the Examiner has allowed claims to the specific examples described in Applicants' specification which corresponds to all of the allowed claims. The Examiner provides no reason for not following *In re Donaldson*.

CLAIM 441

CLAIM 441 recites:

CLAIM 441 An apparatus according to anyone of claims 438, 439 or 440, wherein said means for conducting a superconducting current comprises oxygen.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 442

CLAIM 442 recites:

CLAIM 442 An apparatus according to anyone of claims 438, 439 and 440, wherein said means for conducting a superconducting current comprises one or more of the groups consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 443

CLAIM 443 recites:

CLAIM 443 An apparatus according to anyone of claims 438, 439 or 440, wherein said means for conducting a superconducting current comprises one or more of Be, Mg, Ca, Sr, Ba and Ra and one or more of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 444

CLAIM 444 recites:

CLAIM 444 An apparatus according to anyone of claims 438, 439 and 440, wherein said means for conducting a superconducting current comprises a layered structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 445

CLAIM 445 recites:

CLAIM 445 An apparatus according to anyone of claims 438, 439 and 440, wherein said means for conducting a superconducting current comprises a substantially perovskite structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 446

CLAIM 446 recites:

CLAIM 446 An apparatus according to anyone of claims 438, 439 and 440, wherein said means for conducting a superconducting current comprises a perovskite-like structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 447

CLAIM 447 recites:

CLAIM 447 An apparatus according to anyone of claims 438, 439 and 440, wherein said means for conducting a superconducting current comprises a perovskite related structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 448

CLAIM 448 recites:

CLAIM 448 An apparatus according to anyone of claims 438, 439 and 440, wherein said means for conducting a superconducting current comprises a structure having a perovskite characteristic.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 449

CLAIM 449 recites:

CLAIM 449 An apparatus according to anyone of claims 438, 439 and 440, wherein said means for conducting a superconducting current comprises a transition metal.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 450

CLAIM 450 recites:

CLAIM 450 An apparatus according to anyone of claims 438, 439 and 440, wherein said means for conducting a superconducting current comprises a copper oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 451

CLAIM 451 recites:

CLAIM 451 An apparatus according to anyone of claims 438, 439 and 440, wherein said means for conducting a superconducting current comprises oxygen in a nonstoichiometric amount.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 452

CLAIM 452 recites:

CLAIM 452 An apparatus according to anyone of claims 438, 439 and 440, wherein said means for conducting a superconducting current comprises a multivalent transition metal.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 453

CLAIM 453 recites:

CLAIM 453 An apparatus according to anyone of claims 438, 439 or 440, wherein said means for conducting a superconducting current can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states

"Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 454

CLAIM 454 recites:

CLAIM 454 An apparatus according to claim 441, wherein said means for conducting a superconducting current can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states

"Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 455

CLAIM 455 recites:

CLAIM 455 An apparatus according to claim 442, wherein
said means for conducting a superconducting current can be
made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states

"Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 456

CLAIM 456 recites:

CLAIM 456 An apparatus according to claim 443, wherein said means for conducting a superconducting current can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 457

CLAIM 457 recites:

CLAIM 457 An apparatus according to claim 444, wherein
said means for conducting a superconducting current can be
made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 458

CLAIM 458 recites:

CLAIM 458 An apparatus according to claim 445, wherein said means for conducting a superconducting current can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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"Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 459

CLAIM 459 recites:

CLAIM 459 An apparatus according to claim 446, wherein
said means for conducting a superconducting current can be
made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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"Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 460

CLAIM 460 recites:

CLAIM 460 An apparatus according to claim 447, wherein said means for conducting a superconducting current can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 461

CLAIM 461 recites:

CLAIM 461 An apparatus according to claim 448, wherein said means for conducting a superconducting current can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 462

CLAIM 462 recites:

CLAIM 462 An apparatus according to claim 449, wherein said means for conducting a superconducting current can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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"Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 463

CLAIM 463 recites:

CLAIM 463 An apparatus according to claim 450, wherein
said means for conducting a superconducting current can be
made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 464

CLAIM 464 recites:

CLAIM 464 An apparatus according to claim 451, wherein said means for conducting a superconducting current can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 465

CLAIM 465 recites:

CLAIM 465 An apparatus according to claim 452, wherein said means for conducting a superconducting current can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 466

CLAIM 466 recites:

CLAIM 466 An apparatus comprising:

a superconductive current carrying element comprising a T_c
 $\geq 26K$

said superconductive current carrying element comprises a
property selected from one or more of the group consisting
of a mixed valent oxide, a transition metal, a mixed valent
transition metal, a perovskite structure, a perovskite-like
structure, a perovskite related structure, a layered structure,
a stoichiometric or nonstoichiometric oxygen contents and a
dopant.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

This claim is in means plus function form and under *In re Donaldson* 29 USPQ 2d1845 (Fed. Cir. 1994) should be allowed since the Examiner has allowed claims to the specific examples described in Applicants' specification which corresponds to all of the allowed claims.

CLAIM 467

CLAIM 467 recites:

CLAIM 467 An apparatus according to claim 466, wherein said superconductive current carrying element is at a temperature greater than or equal to 26K.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 468

CLAIM 468 recites:

CLAIM 468 An apparatus according to claim 466, further including a temperature controller for maintaining said superconductive current carrying element at a temperature less than said T_c .

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 469

CLAIM 469 recites:

CLAIM 469 An apparatus according to anyone of claims 466, 467 or 468, wherein said superconductive current carrying element comprises one or more of the group consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 470

CLAIM 470 recites:

CLAIM 470 An apparatus according to anyone of claims 466, 467 or 468, wherein said superconductive current carrying element comprises one or more of Be, Mg, Ca, Sr, Ba and Ra and one or more of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 471

CLAIM 471 recites:

CLAIM 471 An apparatus according to claim 469, wherein said superconductive current carrying element comprises a transition metal.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 472

CLAIM 472 recites:

CLAIM 472 An apparatus according to claim 470, wherein said superconductive current carrying element comprises a transition metal.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 473

CLAIM 473 recites:

CLAIM 473 An apparatus according to anyone of claims 466, 467, or 468, wherein said superconducting current carrying element can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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"Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 474

CLAIM 474 recites:

CLAIM 474 An apparatus according to of claim 471,
wherein said superconducting current carrying element can
be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 475

CLAIM 475 recites:

CLAIM 475 An apparatus according to of claim 472,
wherein said superconducting current carrying element can
be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 476

CLAIM 476 recites:

CLAIM 476 An apparatus comprising:

a superconductive current carrying element comprising a T_c
 $\geq 26K$

said superconductive current carrying element comprises an
oxide, a layered perovskite structure or a layered perovskite-
like structure and comprises a stoichiometric or
nonstoichiometric oxygen content.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 477

CLAIM 477 recites:

CLAIM 477 An apparatus according to claim 476, wherein
said superconductive current carrying element is at a
temperature greater than or equal to 26 K.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 478

CLAIM 478 recites:

CLAIM 478 An apparatus according to claim 476, further including a temperature controller for maintaining said superconductive current carrying element at a temperature less than said T_c.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 479

CLAIM 479 recites:

CLAIM 479 An apparatus according to anyone of claims 476, 477 or 478, wherein said superconductive current carrying element comprises one or more of the group consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 480

CLAIM 480 recites:

CLAIM 480 An apparatus according to anyone of claims 476, 477 or 478, wherein said superconductive current carrying element comprises one or more of Be, Mg, Ca, Sr, Ba and Ra and one or more of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 481

CLAIM 481 recites:

CLAIM 481 An apparatus according to claim 479, wherein said superconductive current carrying element comprises a transition metal.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 482

CLAIM 482 recites:

CLAIM 482 An apparatus according to claim 480, wherein said superconductive current carrying element comprises a transition metal.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 483

CLAIM 483 recites:

CLAIM 483 An apparatus according to claim 476, wherein said superconductive current carrying element comprises copper oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 484

CLAIM 484 recites:

CLAIM 484 An apparatus according to anyone of claims 476, 477 or 478, wherein said superconductive current carrying element can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states

"Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 485

CLAIM 485 recites:

CLAIM 485 An apparatus according to claim 479, wherein said superconductive current carrying element can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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"Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 486

CLAIM 486 recites:

CLAIM 486 An apparatus according to claim 480, wherein said superconductive current carrying element can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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"Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 487

CLAIM 487 recites:

CLAIM 487 An apparatus according to claim 481, wherein
said superconductive current carrying element can be made
according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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"Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 488

CLAIM 488 recites:

CLAIM 488 An apparatus according to claim 482, wherein
said superconductive current carrying element can be made
according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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"Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 489

CLAIM 489 recites:

CLAIM 489 An apparatus according to claim 483, wherein
said superconductive current carrying element can be made
according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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"Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 490

CLAIM 490 recites:

CLAIM 490 An apparatus according to claim 484, wherein
said superconductive current carrying element can be made
according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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"Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 491

CLAIM 491 recites:

CLAIM 491 An apparatus according to claim 485, wherein
said superconductive current carrying element can be made
according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 492

CLAIM 492 recites:

CLAIM 492 The superconducting apparatus of claim 361,
where said phase is crystalline with a structure comprising a
perovskite related structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 493

CLAIM 493 recites:

CLAIM 493 The superconducting apparatus of claim 362,
where said phase is crystalline with a structure comprising a
perovskite related structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 494

CLAIM 494 recites:

CLAIM 494 The combination of claim 12, where said composition includes a superconducting phase comprising a perovskite related structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 495

CLAIM 495 recites:

CLAIM 495 The combination of claim 379, wherein said crystalline structure comprises a perovskite related structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 496

CLAIM 496 recites:

CLAIM 496 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition comprising a copper-oxide compound having a crystal structure comprising a perovskite related structure and a layered characteristic, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a current source for causing an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement

Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 497

CLAIM 497 recites:

CLAIM 497 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including at least one rare-earth or element comprising a rare earth characteristic and at least one alkaline-earth element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{q=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{q=0}$ of the superconductive composition; and
- (c) a current source for causing an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 498

CLAIM 498 recites:

CLAIM 498 A superconductive apparatus for causing electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) causing an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of

Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 499

CLAIM 499 recites:

CLAIM 499 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including at least one rare-earth or rare-earth-like element and at least one alkaline-earth element, the composition having a superconductive/resistive-transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 500

CLAIM 500 recites:

CLAIM 500 An apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element, a rare earth element; and a Group III B element;
- (b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than

those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 501

CLAIM 501 recites:

CLAIM 501 An apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 502

Claim 502 which is allowed recites:

CLAIM 502 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;
- (b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

CLAIM 503

Claim 503 which is allowed recites:

CLAIM 503 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive-resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 504

Claim 504 which is allowed recites:

CLAIM 504 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes an element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 505

Claim 505 which is allowed recites:

CLAIM 505 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the transition metal-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

CLAIM 506

Claim 506 which is allowed recites:

CLAIM 506 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes a Group II A element, and at least one element selected from the group consisting of a rare earth element and a Group III B element;
- (b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

CLAIM 507

Claim 507 which is allowed recites:

CLAIM 507 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including Group II A element, and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition having a superconductive-resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

CLAIM 508

CLAIM 508 recites:

CLAIM 508 An apparatus capable of carrying electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition comprising a superconductor transition temperature T_c of greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of

Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 509

CLAIM 508 recites:

CLAIM 509 An apparatus capable of carrying an electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element, a rare earth element; and a Group III B element;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than

those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 510

CLAIM 510 recites:

CLAIM 510 An apparatus capable of carrying an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 511

Claim 511 which is allowed recites:

CLAIM 511 An apparatus capable of carrying an electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;
- (b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

CLAIM 512

Claim 512 which is allowed recites:

CLAIM 512 An apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive-resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

CLAIM 513

Claim 513 which is allowed recites:

CLAIM 513 An apparatus capable of carrying an electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 514

Claim 514 which is allowed recites:

CLAIM 514 An apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the transition metal-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

CLAIM 515

Claim 515 which is allowed recites:

CLAIM 515 An apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including at least one element selected from the group consisting of a group II A element, at least one element selected from the group consisting of a rare earth element and at least one element selected from the group consisting of a Group III B element, the composition comprising a superconductive-resistive transition temperature defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and
- (c) a source of an electric current to flow in the superconductor element.

CLAIM 516

CLAIM 516 recites:

CLAIM 516 An apparatus of claim 146 wherein said means for carrying a superconductive current is comprised of an oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 517

CLAIM 517 recites:

CLAIM 517 An apparatus comprising:

a superconductive current carrying element comprising a T_c
 $\geq 26K$

said superconductive current carrying element comprises a
metallic, oxygen-deficient, perovskite-like, mixed valent
copper compound.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 518

CLAIM 518 recites:

CLAIM 518 An apparatus according to claim 517, wherein said superconductive current carrying element is at a temperature greater than or equal to 26K.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 519

CLAIM 519 recites:

CLAIM 519 An apparatus according to claim 517, further including a temperature controller for maintaining said superconductive current carrying element at a temperature less than said T_c.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 520

CLAIM 520 recites:

CLAIM 520 An apparatus according to anyone of claims 517, 518 or 519, wherein said superconductive current carrying element comprises one or more of the group consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho Er, Tm, Yb and Lu.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 521

CLAIM 521 recites:

CLAIM 521 An apparatus according to anyone of claims 517, 518 or 519, wherein said superconductive current carrying element comprises one or more of Be, Mg, Ca, Sr, Ba and Ra and one or more of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 522

CLAIM 522 recites:

CLAIM 522 An apparatus comprising:

a superconductive current carrying element comprising a T_c
 $\geq 26K$

said superconductive current carrying element comprises a
composition that can be made according to known principles
of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states

"Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that

cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 523

CLAIM 523 recites:

CLAIM 523 An apparatus according to claim 522, wherein said superconductive current carrying element is at a temperature greater than or equal to 26K.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 524

CLAIM 524 recites:

CLAIM 524 An apparatus according to claim 523, further including a temperature controller for maintaining said superconductive current carrying element at a temperature less than said T_c .

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 525

CLAIM 525 recites:

CLAIM 525 An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises one or more of the group consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 526

CLAIM 526 recites:

CLAIM 526 An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises one or more of Be, Mg, Ca, Sr, Ba and Ra and one or more of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 527

CLAIM 527 recites:

CLAIM 527 An apparatus according to claim 525, wherein said superconductive current carrying element comprises a transition metal.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 528

CLAIM 528 recites:

CLAIM 528 An apparatus according to claim 526, wherein said superconductive current carrying element comprises a transition metal.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 529

CLAIM 529 recites:

CLAIM 529 An apparatus according to claim 522, wherein
said superconductive current carrying element comprises
copper oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 530

CLAIM 530 recites:

CLAIM 530 An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element is substantially perovskite.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 531

CLAIM 531 recites:

CLAIM 531 An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises a perovskite-like structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 532

CLAIM 532 recites:

CLAIM 532 An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises a perovskite related structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 533

CLAIM 533 recites:

CLAIM 533 An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises a nonstoichiometric amount of oxygen.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 534

CLAIM 534 recites:

CLAIM 534 An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises a layered structure.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 535

CLAIM 535 recites:

CLAIM 535 An apparatus comprising a superconductor exhibiting a superconducting onset at an onset temperature greater than or equal to 26°K, said superconductor being comprised of at least four elements, none of which is a means for carrying a superconducting current at a temperature greater than or equal to 26°K, a temperature controller for maintaining said superconductor at an operating temperature in excess of said onset temperature to maintain said superconductor in a superconducting state and a current source for passing current through said superconductor while in said superconducting state.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 536

CLAIM 536 recites:

CLAIM 536 An apparatus comprising:

a means for carrying a superconductive current exhibiting a superconductive state at a temperature greater than or equal to 26°K,

a cooler for cooling said composition to a temperature greater than or equal to 26°K at which temperature said means for carrying a superconductive current exhibits said superconductive state, and

a current source for passing an electrical current through said composition while said composition is in said superconductive state.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by

Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

This claim is in means plus function form and under *In re Donaldson* 29 USPQ 2d1845 (Fed. Cir. 1994) should be allowed since the Examiner has allowed claims to the specific examples described in Applicants' specification which corresponds to all of the allowed claims. The Examiner provides no reason for not following *In re Donaldson*.

CLAIM 537

CLAIM 537 recites:

CLAIM 537 An apparatus comprising:

a metallic, oxygen-deficient, perovskite-like, mixed valent transition metal composition exhibiting a superconductive state at a temperature greater than or equal to 26°K,

a temperature controller maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state, and

a current source passing an electrical current through said composition while said composition is in said superconductive state.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by

Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 538

CLAIM 538 recites:

CLAIM 538 The apparatus of claim 537, where said means for carrying a superconductive current is comprised of a metal oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 539

CLAIM 539 recites:

CLAIM 539 The apparatus of claim 537, where said means for carrying a superconductive current is comprised of a transition metal oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 540

CLAIM 540 recites:

CLAIM 540 An apparatus comprising:

a composition comprising oxygen exhibiting a superconductive state at a temperature greater than or equal to 26°K, a temperature controller for maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state, and

a source of an electrical current through said composition while said composition is in said superconductive state.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 541

CLAIM 541 recites:

CLAIM 541 An apparatus according to claim 540, where said composition is comprised of a metal oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 542

CLAIM 542 recites:

CLAIM 542 An apparatus according to claim 541, where said composition is comprised of a transition metal oxide.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

CLAIM 543

CLAIM 543 recites:

CLAIM 543 A combination, comprising:

an oxygen containing composition exhibiting the onset of a
DC substantially zero resistance state at an onset
temperature in excess of 30°K, and

a current source for passing an electrical current through
said composition while it is in said substantially zero
resistance state.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

**CLAIMS 544 TO 550 WERE ADDED BY THE TWELFTH SUPPLEMENTARY
RESPONSE WHICH WAS NOT ENTERED WHEN THIS APPEAL BRIEF
WAS FILED**

CLAIM 544

CLAIM 544 recites:

CLAIM 544 (NEW) An apparatus according to claim 535, wherein
said superconductor can be made according to known principles of
ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim

The sentenced bridging page 1 and 2 of the specification states

"Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure

converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 545

CLAIM 545 recites:

CLAIM 545 (NEW) An apparatus according to claim 536,
wherein said means for carrying a superconductive current can
be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 546

CLAIM 546 recites:

CLAIM 546 (NEW) An apparatus according to any one of claims 537, 538 or 539 wherein said composition can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 547

CLAIM 547 recites:

CLAIM 547 (NEW) An apparatus according to any one of claims 540, 541 or 542 wherein said composition can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 548

CLAIM 548 recites:

CLAIM 548 (NEW) A combination according to claim 543,
wherein said composition can be made according to known
principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 549

CLAIM 549 recites:

CLAIM 549 (NEW) An apparatus according to anyone of claims 496 to 514 or 515, wherein said superconductive element can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 550

CLAIM 550 recites:

CLAIM 550 An apparatus according to claim 516, wherein said means for carrying a superconductive current can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 551

CLAIM 551 recites:

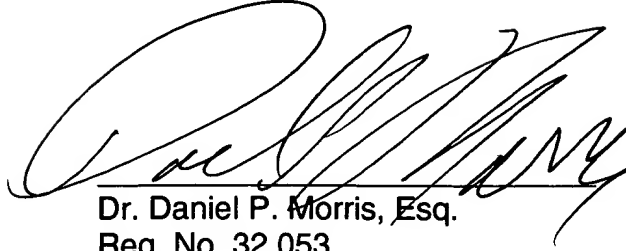
CLAIM 551 (NEW) An apparatus according to anyone of claims 517 to 520 or 521, wherein said superconductive current carrying element can be made according to known principles of ceramic science.

The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that came within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second and Third Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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Respectfully submitted,

A large, stylized handwritten signature in black ink, appearing to read 'Daniel P. Morris', is written over a horizontal line.

Dr. Daniel P. Morris, Esq.
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